

TC-WR80ES / WR820A

SERVICE MANUAL

US Model



This photo is TC-WR820A.

SPECIFICATIONS

Recording system 4-track 2-channel stereo
Fast winding time Approx. 90 sec. (with HF-60 cassette)
Bias AC bias
Signal-to-noise ratio (NAB, at peak level)

Dolby NR switch Cassette	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	59dB (WR80ES)	67dB (WR80ES)	74dB (WR80ES)
	58dB (WR820A)	66dB (WR820A)	73dB (WR820A)
TYPE II (Sony UX-S)	58dB (WR80ES)	66dB (WR80ES)	73dB (WR80ES)
	57dB (WR820A)	65dB (WR820A)	72dB (WR820A)
TYPE I (Sony HF-S)	56dB (WR80ES)	64dB (WR80ES)	71dB (WR80ES)
	55dB (WR820A)	63dB (WR820A)	70dB (WR820A)

Total harmonic distortion 1.0% (with Sony METAL-ES cassettes)

Frequency response (DOLBY NR OFF)

TYPE IV cassette (Sony METAL-ES)	30-18,000Hz (±3dB) 30-15,000Hz (OVU recording)
TYPE II cassette (Sony UX-S)	30-17,000Hz (±3dB)
TYPE I cassette (Sony HF-S)	30-15,000Hz (±3dB)

Wow and flutter 0.07% WRMS (NAB)

Model Name Using Similar Mechanism		TC-WR720/WR720A	
Tape Transport Mechanism Type	TC-WR80ES	DECK A	TCM-190RA11
		DECK B	TCM-190RB31
	TC-WR820A	DECK A, B	TCM-190RB12

Inputs

Line inputs (phono jacks)	Sensitivity	77.5mV (-20dB)
	Input impedance	50kohms

Outputs

Line outputs (phono jacks)	Rated output level	0.44V (-5dB) at a load impedance of 47kohms
	Load impedance	Over 10kohms
Headphones (stereo phono jack)	Output level	0.3mW at a load impedance of 32 ohms

General

Power requirements 120 V AC, 60Hz
Power consumption 29 Watts (WR80ES)
33 Watts (WR820A)
Dimensions Approx. 430×135×285mm (w/h/d)
(17×5³/₈×11¹/₄ inches)
including projecting parts and controls
Weight Approx. 5kg (11lbs 1oz)
Supplied accessories Audio connecting cord (2)
Remote commander (RM-900W)(1)
(WR820A)
Sony size AA batteries (2) (WR820A)


Design and specifications subject to change without notice.

STEREO CASSETTE DECK
SONY®



FEATURES

- **The Dolby HX PRO* system** which improves the linearity of a tape's high-range response during recording.
- **Automatic tape type detection** during playback and recording.
- **A relay function** for long playback.
- **Auto-synchro dubbing** at normal or high (double) speed.
- **AMS and memory play functions** which provide easy access to desired selections.
- **An easy-to-read linear counter** which shows the elapsed recording or playback time for decks A and B. (WR80ES)
- **An easy-to-read digital counter** equipped with a memory function (for decks A and B). (WR820A)

*Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen. "DOLBY", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

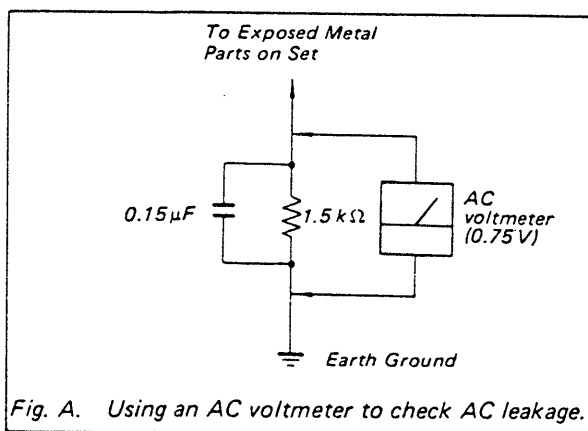




Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

—MODEL IDENTIFICATION—
(Specification Label)

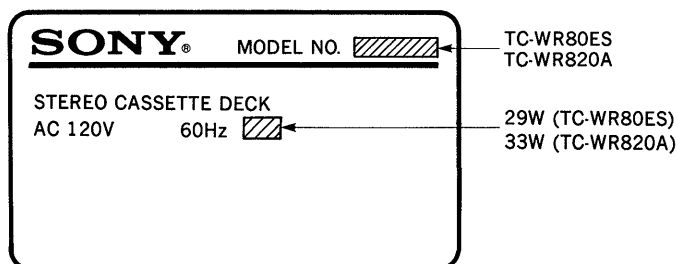


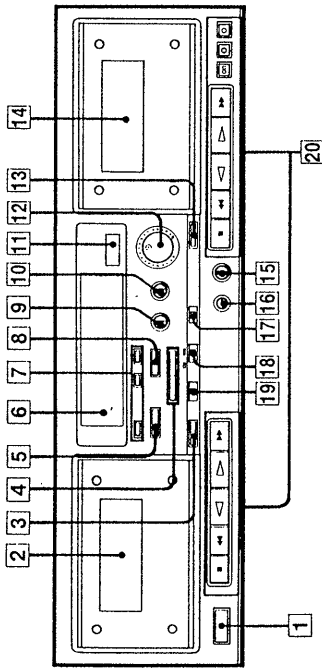
TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1. GENERAL		
1-1.	Location and Function of Controls	4
2. DISASSEMBLY		
2-1.	Front Panel	5
2-2.	Mechanism Deck	5
2-3.	Capstan Motor, Reel Motor (1)	6
2-4.	Capstan Motor, Reel Motor (2)	6
2-5.	Head, Pinch Roller	6
3. MECHANICAL ADJUSTMENTS		7
4. ELECTRICAL ADJUSTMENTS		7
5. DIAGRAMS		
5-1.	Circuit Boards Location	11
5-2.	Semiconductor Lead Layouts	12
5-3.	Printed Wiring Boards —Main Section—	14
5-4.	Schematic Diagram —Audio/Power Section—	19
5-5.	Schematic Diagram —System Control Section—	23
6. EXPLODED VIEWS		
6-1.	Chassis Section	27
6-2.	Front Panel Section	28
6-3.	Mechanism Section-1	29
6-4.	Mechanism Section-2	30
7. ELECTRICAL PARTS LIST		31

SECTION 1 GENERAL

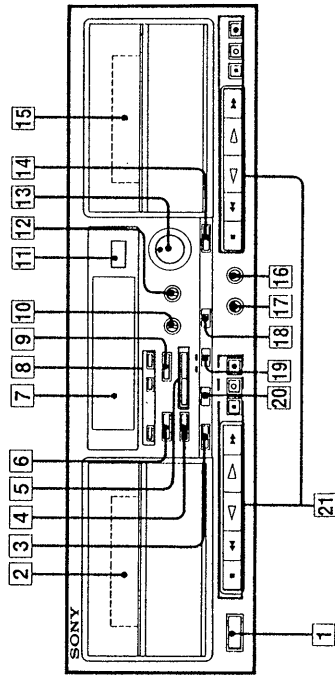
1-1. LOCATION AND FUNCTION OF CONTROLS

(TC-WR80ES)



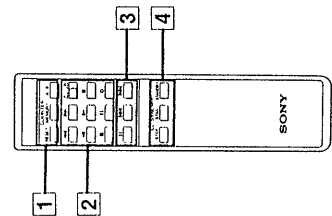
- 1 POWER switch
- 2 Cassette holder (deck A)
- 3 ▲ eject button (deck A)
- 4 SYNCHRO DUBBING buttons
HIGH SPEED button
NORM (normal) SPEED button
- 5 BLANK SKIP button
- 6 Display panel
- 7 COUNTER buttons
A/B (deck A/B) selector
RESET button
MEMORY button
- 8 AUTO PAUSE button
- 9 BIAS control (deck B)
- 10 BALANCE control
- 11 Remote control sensor
You can remotely control this cassette deck with:
— A remote commander that came with a Sony amplifier or receiver if it has the mark and cassette deck control capability.
— Any optional Sony remote commander with the mark.
- 12 REC (recording) LEVEL control
- 13 ▲ eject button (deck B)
- 14 Cassette holder (deck B)
- 15 Headphone LEVEL control
- 16 PHONES (headphones) jack (stereo phone jack)
- 17 NR (Dolby noise reduction) switch
- 18 DIR (direction) MODE switch
- 19 TIMER switch
- 20 Tape operation buttons
■ (stop) button
◀ (leftward fast winding) button
▶ (reverse play) button
▶ (rightward fast winding) button
|| PAUSE button
○ REC MUTE (record muting) button
● REC (recording) button

(TC-WR820A)



- 1 POWER switch
- 2 Cassette holder (deck A)
- 3 ▲ eject button (deck A)
- 4 A + B REC (recording) button and indicator
- 5 SYNCHRO DUBBING buttons
HIGH SPEED button
NORM (normal) SPEED button
- 6 BLANK SKIP button
- 7 Display panel
- 8 COUNTER buttons
A/B (deck A/B) button
RESET button
MEMORY button
- 9 AUTO PAUSE button
- 10 BIAS control (deck B)
- 11 Remote control sensor
- 12 BALANCE control
- 13 REC (recording) LEVEL control
- 14 ▲ eject button (deck B)
- 15 Cassette holder (deck B)
- 16 Headphones LEVEL control
- 17 PHONES (headphones) jack (stereo phone jack)
- 18 NR (Dolby noise reduction) switch
- 19 DIR (direction) MODE switch
- 20 TIMER switch
- 21 Tape operation buttons
■ (stop) button
◀ (leftward fast winding) button
▶ (reverse play) button
▶ (rightward fast winding) button
|| PAUSE button
○ REC MUTE (record muting) button
● REC (recording) button

Remote Commander (RM-900W) (TC-WR820A only)



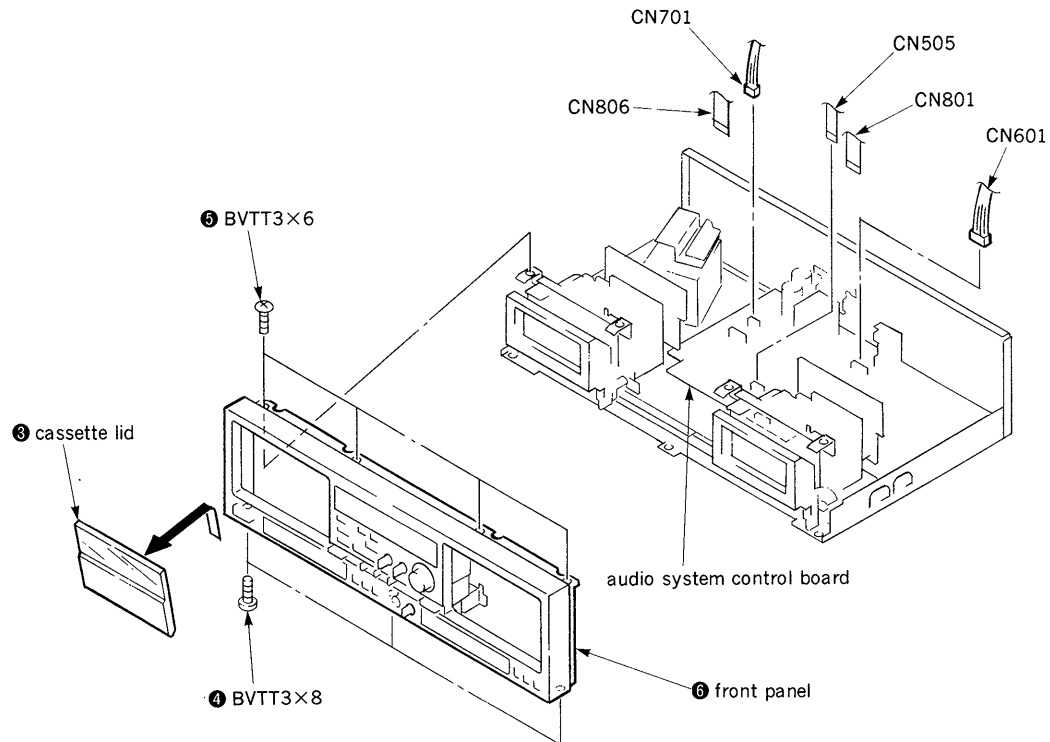
- 1 Counter buttons
RESET button
MEMORY button
A/B (deck A/B) button
- 2 Tape operation buttons
◀ (leftward fast winding) button
▶ (rightward fast winding) button
A/B deck selector: Selects deck A or B for tape operation control.
▶ (reverse play) button
▶ (forward play) button
● (recording) button
■ (stop) button
|| (pause) button
○ (record muting) button
- 3 CD (compact disc) operation buttons
|| (pause) button
◀▶▶▶ Automatic Music Sensor (AMS) buttons
- 4 CD SYNCHRO buttons
STOP (synchronized recording stop) button
START (synchronized recording start) button
STANDBY (synchronized recording standby) button

SECTION 2 DISASSEMBLY

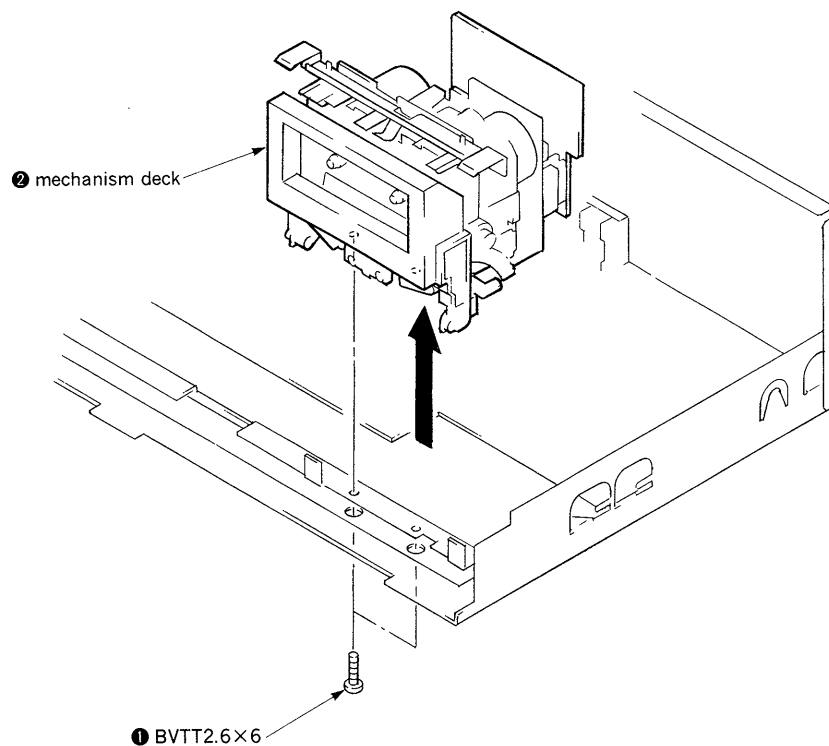
Note: Follow the disassembly procedure in the numerical order given.

2-1. FRONT PANEL

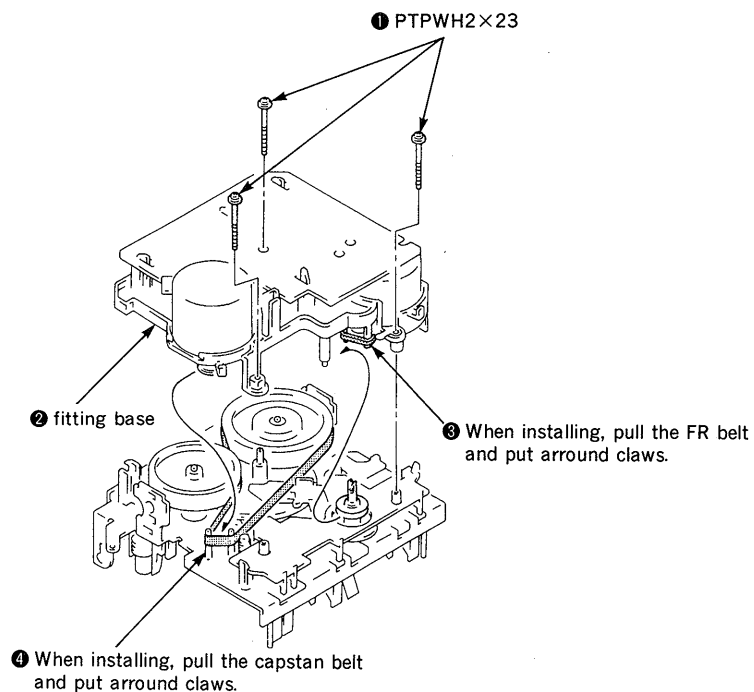
- ❶ Remove the connector from audio system control board.
- ❷ Push the EJECT button.



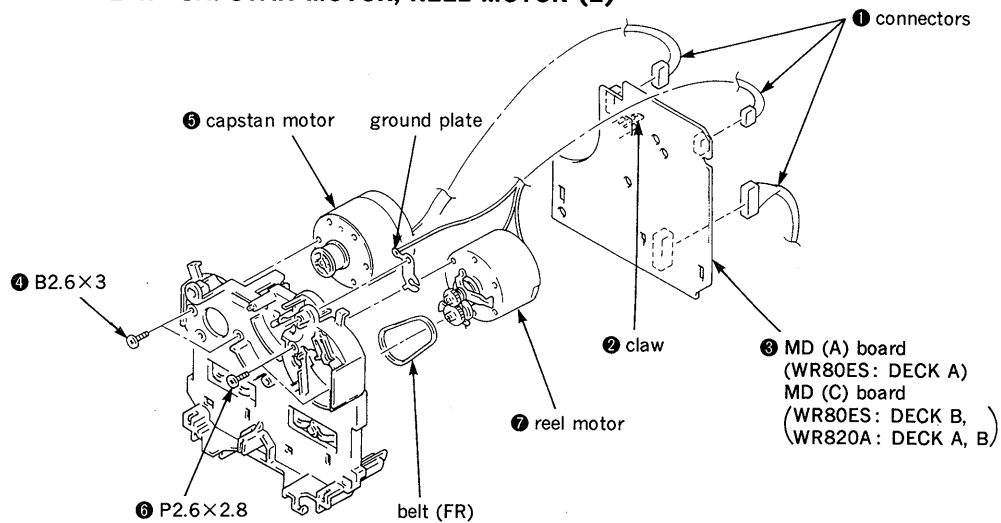
2-2. MECHANISM DECK



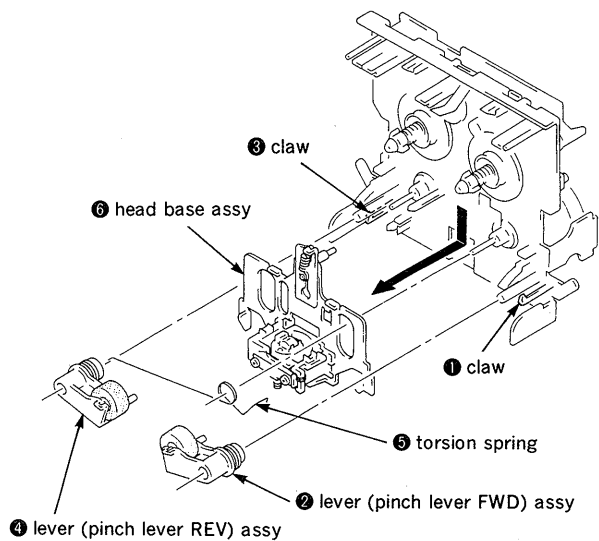
2-3. CAPSTAN MOTOR, REEL MOTOR (1)



2-4. CAPSTAN MOTOR, REEL MOTOR (2)



2-5. HEAD, PINCH ROLLER



SECTION 3 MECHANICAL ADJUSTMENTS

PRECAUTION

- Clean the following parts with a denatured alcohol-moistened swab:
 record/playback head pinch roller
 erase head rubber belts
 capstan idlers
- Demagnetize the record/playback head with a head demagnetizer.
 (Head demagnetizer do not approach for the erase head.)
- Do not use a magnetized screwdriver for the adjustment.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

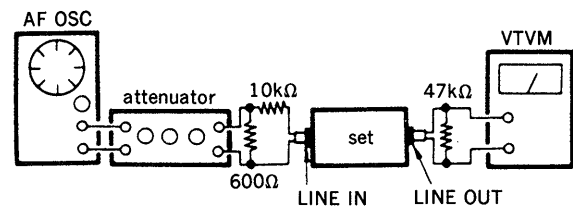
Torque	Torque meter	Meter reading
Forward	CQ-102C	30 to 65g·cm (0.42 to 0.90 oz·inch)
Forward back tension	CQ-102C	1 to 6g·cm (0.014 to 0.08 oz·inch)
Reverse	CQ-102RC	30 to 65g·cm (0.42 to 0.90 oz·inch)
Reverse back tension	CQ-102RC	1 to 6g·cm (0.014 to 0.08 oz·inch)
Forward, Reverse	CQ-201B	70 to 120g·cm (0.98 to 1.67 oz·inch)

SECTION 4 ELECTRICAL ADJUSTMENTS

PRECAUTION

- The adjustment should be performed in the publication.
 (Be sure to make playback adjustment at first.)
- The adjustment and measurement should be performed for both L-CH and R-CH.
 - Switch position
 DOLBY NR switch : OFF
 DIR MODE switch : ⇄
 - Standard record position
 Deliver the standard input signal level to input jack and set the REC LEVEL control to obtain the standard output signal level as follows.

—Record Mode—



Standard Input Level

Input terminal	LINE IN
source impedance	10kΩ
input signal level	0.25V (−10dB)

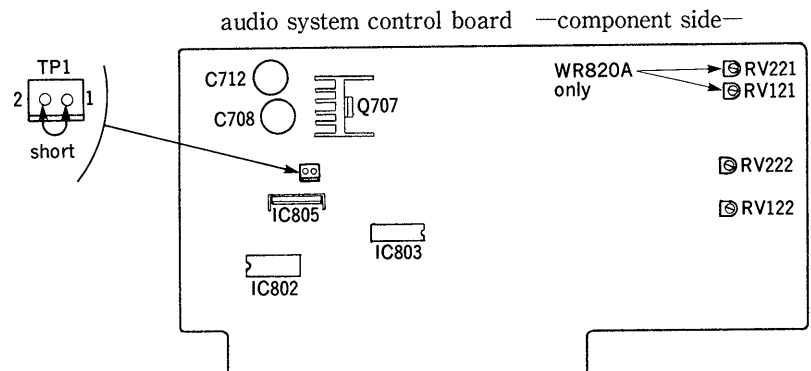
Standard Output Level

Output terminal	LINE OUT
load impedance	47kΩ
output signal level	0.44V (−5dB)

Test Tape

Tape	Contents	Use
P-4-A100	10kHz, −10dB	Azimuth Adjustment
P-4-L300	315Hz, 0dB	Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

- Perior to electrical adjustments, short the connector TP1 (test mode).



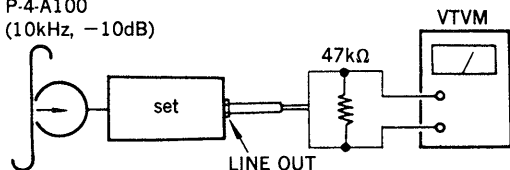
Record/Playback Head Azimuth Adjustment

DECK A DECK B

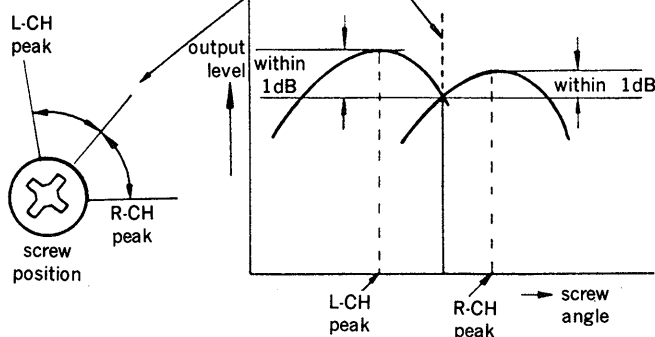
Procedure :

1. Reverse Playback Mode

test tape
P-4-A100
(10kHz, -10dB)

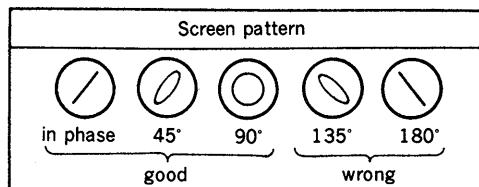
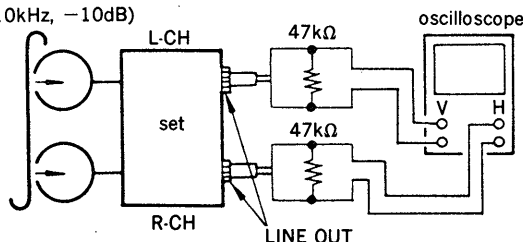


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.



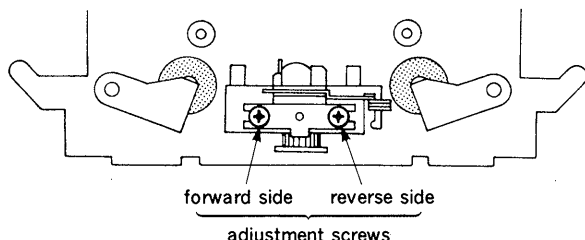
3. Playback Mode

test tape
P-4-A100
(10kHz, -10dB)



4. Change the forward playback mode and repeat the steps 1 to 3.
5. After the adjustment, lock the adjustment screws with suitable locking compound.

Adjustment Location : —record/playback head—



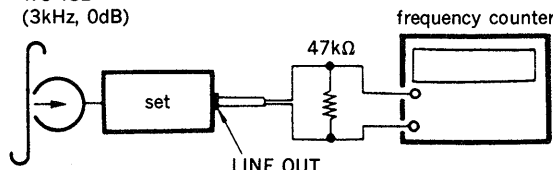
Tape Speed Adjustment DECK A DECK B

Perform high speed adjustment before normal speed adjustment.

Procedure :

—Forward Playback Mode—

test tape
WS-48B
(3kHz, 0dB)



(high speed adjustment)

1. Keep on pressing the SYNCHRO DUBBING HIGH SPEED switch.
2. Confirm that the frequency counter reading becomes within adjustment limits of $6,000 \pm 60\text{Hz}$ on both of deck A and deck B.
3. If the adjustment limits are not satisfied, adjust each RV72 or RV72A (WR80ES: deck A only) so that the frequency counter reading becomes within adjustment limits of $6,000 \pm 30\text{Hz}$ on both of deck A and deck B.
4. Change the reverse playback mode and repeat the steps 1 to 3.

(normal speed adjustment)

5. Keep on pressing the SYNCHRO DUBBING NORM SPEED switch.
6. Confirm that the frequency counter reading becomes within adjustment limits of $3,000 \pm 30\text{Hz}$ on both of deck A and deck B.
7. If the adjustment limits are not satisfied, adjust each RV71 or RV71A (WR80ES: deck A only) so that the frequency counter reading becomes within adjustment limits of $3,000 \pm 15\text{Hz}$ on both of deck A and deck B.
8. Change the reverse playback mode and repeat the steps 5 to 7.

Frequency difference between the beginning and the end of the tape should be within 3%.

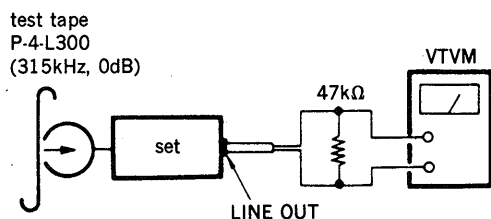
Frequency difference between deck A and deck B the beginning of the tape should be within 1.5%.

Adjustment Location : MD (A) board (WR80ES: deck A)
MD (C) board (deck B, WR820A : deck A)

Playback Level Adjustment DECK A DECK B

Procedure :

—Forward Playback Mode—



Adjust each RV11 or RV11A (WR80ES : deck A only) (L-CH) and RV21 or RV21A (WR80ES : deck A only) (R-CH) so that the VTVM reading becomes within adjustment limits below on both of deck A and deck B.

Adjustment Limits :

LINE OUT level : $-15 \pm 0.5\text{dB}$ (0.130 to 0.146V)

Level difference between channels : within 0.5dB

Confirm the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

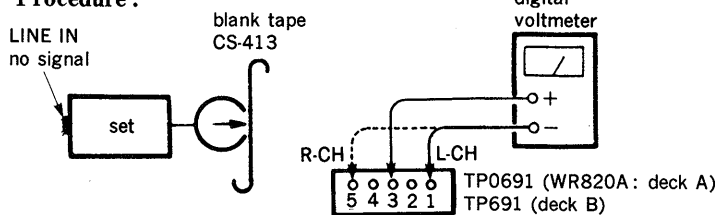
Adjustment Location : MD (A) board (WR80ES : deck A)
MD (C) board (deck B, WR820A : deck A)

Bias Consumption Current Adjustment

DECK A DECK B

This adjustment should be performed when replacing the head assy or step-up transformer (T0391, 0491 (WR820A : deck A) and T391, 491 (deck B)), or DOLBY HX-PRO IC (IC0691 (WR820A : deck A) and IC691 (deck B)).

Procedure :



(WR820A : deck A)

1. Connect the digital voltmeter to test point TP0691.
2. Set RV0391 (L-CH) and RV0491 (R-CH) to mechanical center.
3. Set to forward record mode.
4. Adjust T0391 (L-CH) and T0491 (R-CH) so that the digital voltmeter reading becomes minimum.

(deck B)

5. Similarly, connect the digital voltmeter to test point TP691.
6. Set RV391 (L-CH) and RV491 (R-CH) to mechanical center.
7. Set to forward record mode.
8. Adjust T391 (L-CH) and T491 (R-CH) so that the digital voltmeter reading becomes minimum.

Adjustment Location : HX-PRO board (A) (deck A),
HX-PRO board (B) (deck B)

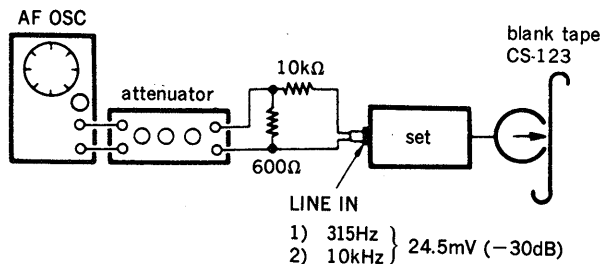
Record Bias Adjustment DECK A DECK B

Setting :

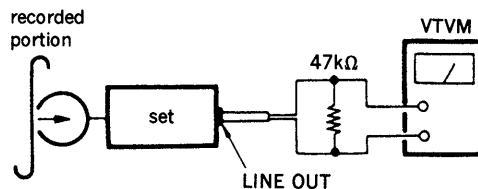
REC LEVEL control : standard record position (Refer to page 7.)

Procedure :

1. Record Mode



2. Playback Mode



(WR820A : deck A)

3. Playback the signal recorded in step 1, and confirm that the 10kHz playback output level is VTVM reading becomes within adjustment limits below relative to the 315Hz output.
4. If the adjustment limits are not satisfied, adjust each RV0391 (L-CH) and RV0491 (R-CH) so that the VTVM reading becomes within adjustment limits next page.

(deck B)

5. Similarly, playback the signal recorded in step 1, and confirm that the 10kHz playback output level is VTVM reading becomes within adjustment limits below relative to the 315Hz output.
6. If the adjustment limits are not satisfied, adjust each RV391 (L-CH) and RV491 (R-CH) so that the VTVM reading becomes within adjustment limits next page.

Adjustment Limits :

10kHz playback output

relative to the 315Hz output : $0 \pm 0.5\text{dB}$

(0.732 to 0.821V)

Adjustment Location : audio system control board

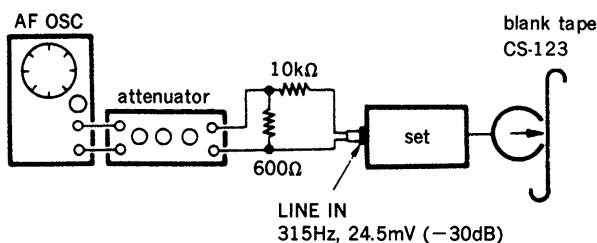
Record Level Adjustment DECK A DECK B

Setting :

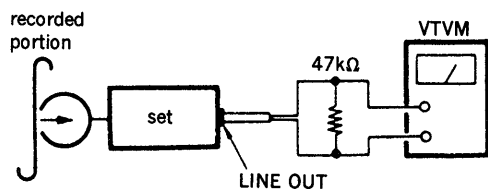
REC LEVEL control: standard record position (Refer to page 7.)

Procedure :

1. Record Mode



2. Playback Mode



(WR820A : deck A)

3. Playback the signal recorded in step 1, and confirm that the 10kHz playback output level is VTVM reading becomes within adjustment limits below relative to the 315Hz output.
4. If the adjustment limits are not satisfied, adjust each RV121 (L-CH) and RV221 (R-CH) so that the VTVM reading becomes within adjustment limits below.

(deck B)

5. Similarly, playback the signal recorded in step 1, and confirm that the 10kHz playback output level is VTVM reading becomes within adjustment limits below relative to the 315Hz output.
6. If the adjustment limits are not satisfied, adjust each RV122 (L-CH) and RV222 (R-CH) so that the VTVM reading becomes within adjustment limits below.

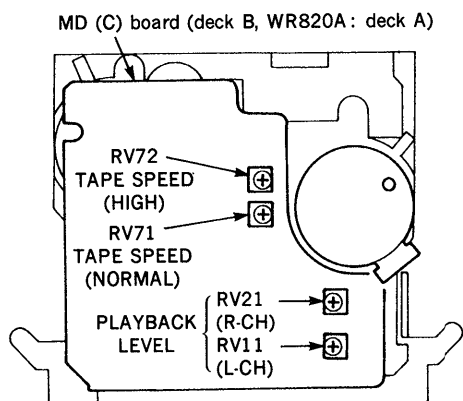
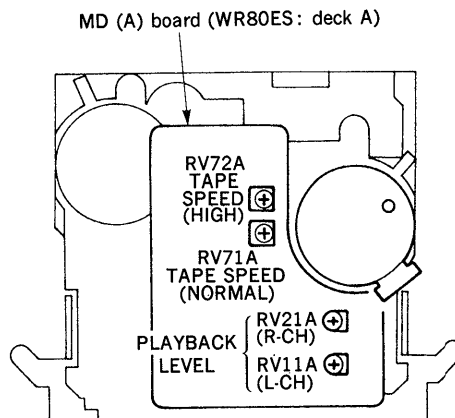
Adjustment Limits :

315Hz playback output level : $-25 \pm 0.5\text{dB}$ (42 to 46mV)

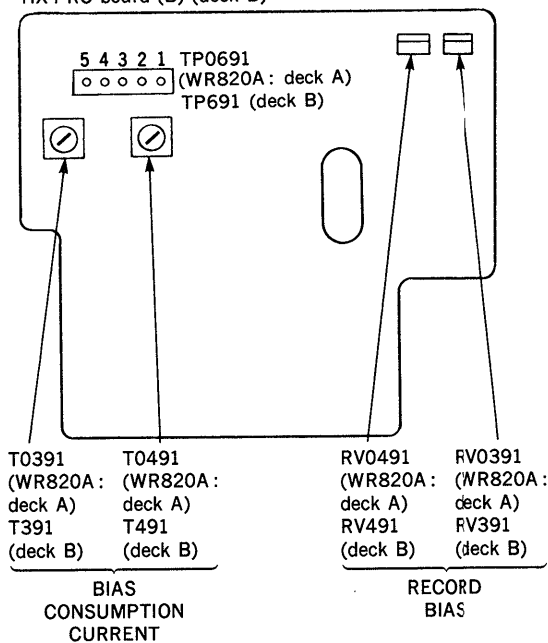
Adjustment Location : audio system control board

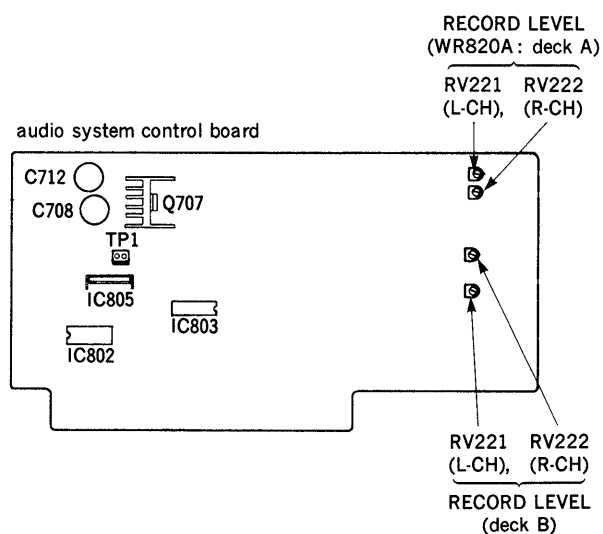
Note : After adjustment, open the connector TP1.

—Adjustment Parts Location Diagrams—



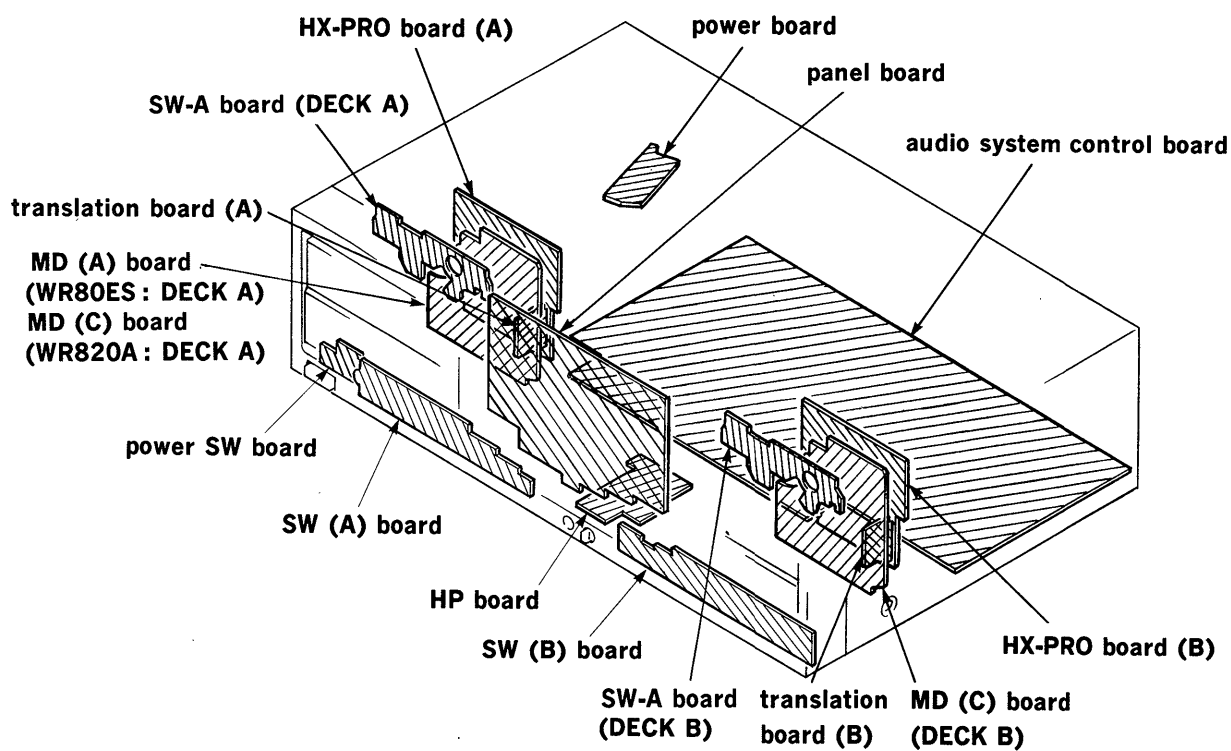
HX-PRO board (A) (deck A),
HX-PRO board (B) (deck B)





SECTION 5 DIAGRAMS

5-1. CIRCUIT BOARDS LOCATION

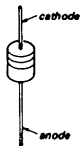


5-2. SEMICONDUCTOR LEAD LAYOUTS

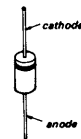
DTA114ES
DTA144ES
DTC114ES
DTC143TS
DTC144ES
DTC144WS
2SC2603-EF
2SD1012-FG



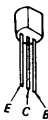
HZS6A1L
HZS9A2L
UZL-11L2
UZL-7H1
UZL-7L2
1SS202-1



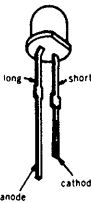
10E2N



2SA1317-S
2SA1317-STU
2SB1013-4
2SC945-P



SEL2210S



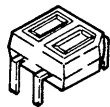
2SB1187-EF



2SD1761-EF



GP-2S09-C



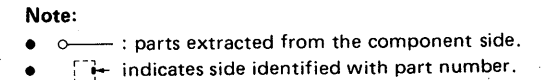
● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D31	I-9	Q52	G-9
D131	E-25	Q53	H-9
D231	F-25	Q71	H-8
D501	D-24	Q71A(*1)	B-8
D502	D-24	Q101	D-26
D503	D-24	Q102	C-26
D571	F-25	Q121(*1)	C-22
D572	F-25	Q171	E-24
D601	D-30	Q201	B-26
D602	E-30	Q202	B-25
D701	D-30	Q221(*1)	B-22
D702	D-32	Q271	F-24
D703	D-33	Q501	E-25
D704	B-33	Q502	D-25
D705	B-33	Q503	D-25
D706	D-34	Q504	D-24
D707	C-33	Q505	D-24
D708	B-33	Q521(*1)	F-25
D709	C-29	Q551	F-24
D710	C-33	Q552	E-22
D711	C-33	Q553	D-22
D712	C-30	Q571	F-25
D713	D-33	Q572	F-25
D801	F-27	Q601	G-26
D811	H-32	Q701	B-31
D812	H-31	Q702	B-31
D902(*1)	E-11	Q703	D-32
		Q704	D-32
IC31	I-8	Q705	B-30
IC31A(*2)	D-7	Q706	C-29
IC81	B-4	Q707	C-31
IC82(*2)	B-2	Q708	C-29
IC501	C-25	Q801	G-23
IC503	F-27	Q802	H-33
IC504	E-25	Q803	H-31
IC506	D-26	Q804	H-31
IC509	E-22	Q805(*1)	E-30
IC510	F-24	Q806	F-30
IC551(*1)	C-21	Q807	F-27
IC601	D-19	Q851(*1)	H-30
IC691	G-3	Q852(*1)	H-30
IC701	C-30	Q853	G-29
IC802	F-32	Q854	G-30
IC803	F-29	Q891	F-27
IC804	F-31	Q901	F-16
IC805	E-31	Q902	F-16
IC806	G-30	Q903	F-16
IC807(*1)	G-31	Q904	F-12
IC901	G-14	Q905	H-16
IC902	G-17	Q906	G-15
IC0691(*1)	D-3	Q907	G-15
		Q908	H-15
Q51	G-9		

* 1 : Used on TC-WR820A only.

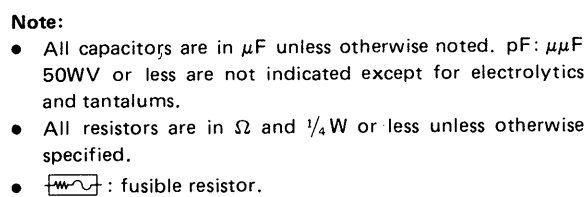
* 2 : Used on TC-WR80ES only.






- Refer to page 12 for Semiconductor Lead Layouts
- Refer to page 13 for Semiconductor Location.



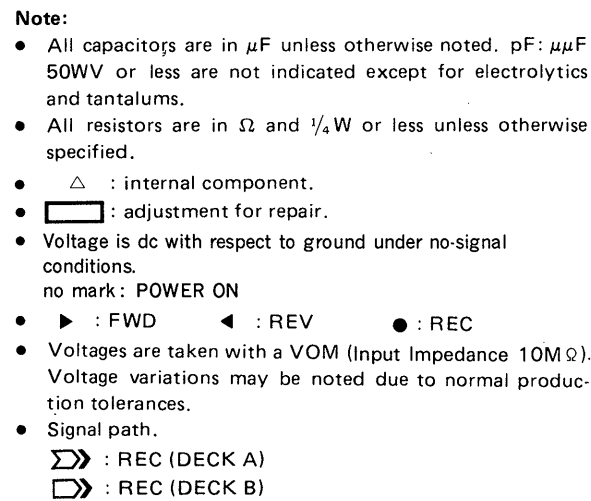


IC506 MC14053BCP



-  : adjustment for repair.
- Voltages are dc with condition to ground under no-signal conditions
- no mark: POWER ON
- ▶ : FWD ◀ : REV
- ▶▶ : FF ◀◀ : REW ● : REC
- Voltages are taken with a VOM (input Impedance 10M Ω)
- Voltage variations may be noted due to normal production tolerances.
- Signal path.
 -  : PB (DECK A)
 -  : REC (DECK A)
 -  : PB (DECK B)
 -  : REC (DECK B)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
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SECTION 6 EXPLODED VIEWS

NOTE:



- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

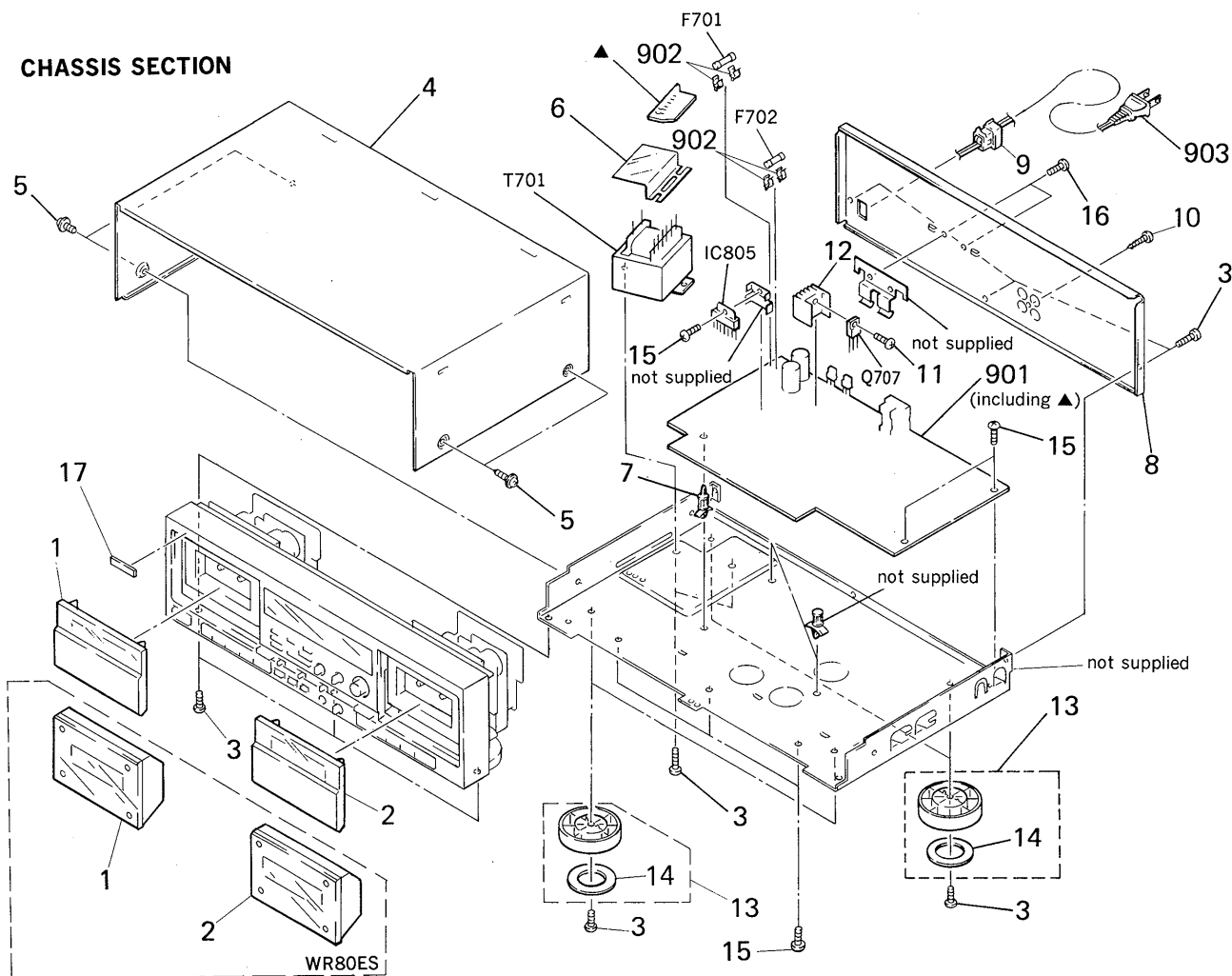
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

- Color Indication of Appearance Parts
Example:

(RED) ... KNOB, BALANCE (WHITE)

↑
Cabinet's Color↑
Parts Color

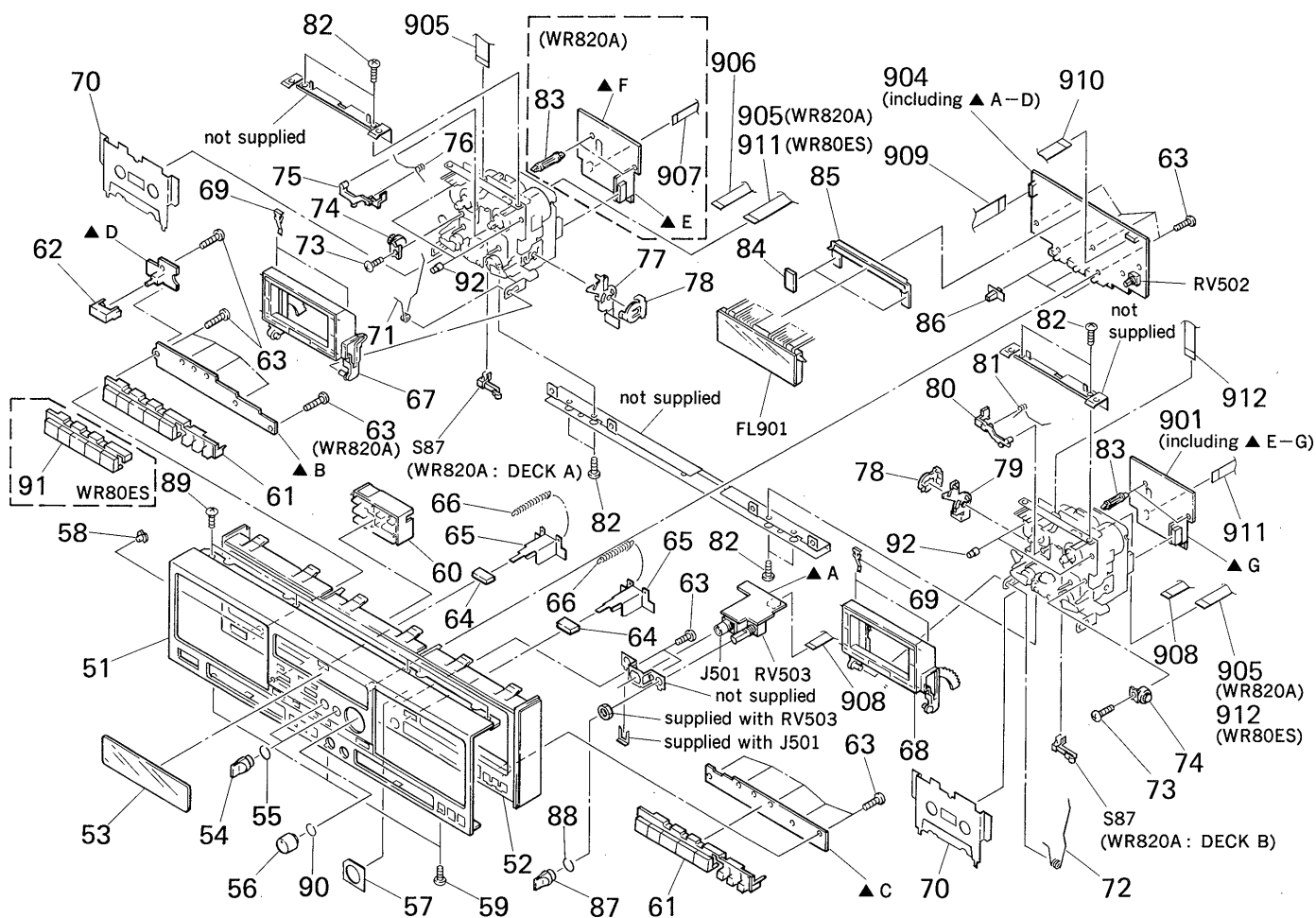
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

6-1. CHASSIS SECTION

Ref.No	Part No.	Description	Remarks
1	X-3346-311-1	(WR80ES)....LID (A) ASSY, CASSETTE	
1	X-3346-323-1	(WR820A)....LID (A) ASSY, CASSETTE	
2	X-3346-312-1	(WR80ES)....LID (B) ASSY, CASSETTE	
2	X-3346-324-1	(WR820A)....LID (B) ASSY, CASSETTE	
3	7-682-548-09	SCREW +BVTT 3X8 (S)	
4	★4-929-294-42	CASE	
5	3-704-366-01	SCREW (CASE) (M3X8)	
6	★3-337-136-11	COVER, TRANSFORMER SAFETY	
7	★3-346-265-11	HOLDER, PC BOARD	
8	★3-354-920-01	(WR820A)....PANEL, BACK	
8	★3-354-920-11	(WR80ES)....PANEL, BACK	
9	★3-703-244-00	BUSHING (2104), CORD	
10	7-621-849-00	SCREW, TAPPING	
11	7-685-646-79	SCREW BVTP 3X8 TYPE2 SLIT	
12	★4-363-147-00	HEAT SINK, H.PIN	
13	X-3304-938-2	(WR80ES)....FOOT ASSY	14

Ref.No	Part No.	Description	Remarks
13	X-4885-950-1	(WR820A)....FOOT ASSY	14
14	4-923-836-11	CUSHION	
15	7-682-547-04	SCREW +BVTT 3X6 (S)	
16	7-682-547-09	SCREW +BVTT 3X6	
17	4-908-848-01	EMBLEM, SONY	
901	★A-2006-258-A	(WR820A)....MOUNTED PCB, AUDIO SYSTEM CONTROL	
901	★A-2006-260-A	(WR80ES)....MOUNTED PCB, AUDIO SYSTEM CONTROL	
902	★1-533-213-31	HOLDER, FUSE	
903	▲1-555-465-00	CORD, POWER	
F701	▲1-532-742-11	FUSE, GLASS TUBE (1.6A/125V)	
F702	▲1-532-742-11	FUSE, GLASS TUBE (1.6A/125V)	
IC805	8-759-207-05	IC TA7272P	
Q707	8-729-920-98	TRANSISTOR 2SD1761-EF	
T701	▲1-450-147-11	TRANSFORMER, POWER	

6-2. FRONT PANEL SECTION



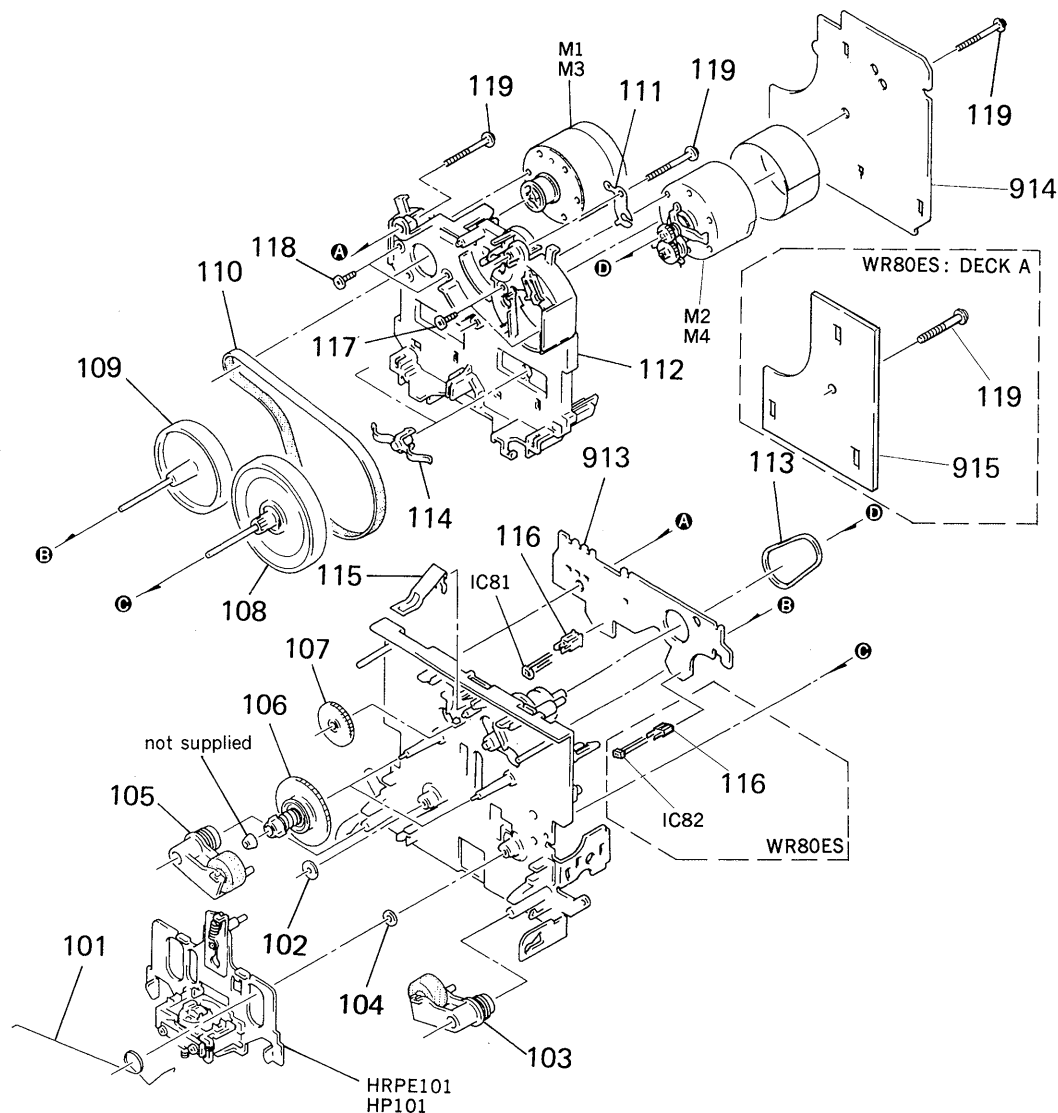
Ref.No	Part No.	Description	Remarks
51	3-354-939-41	(WR80ES)....PANEL, FRONT	
51	3-354-939-61	(WR820A)....PANEL, FRONT	
52	3-354-916-12	PANEL (BASE)	
53	3-354-933-02	(WR820A)....WINDOW (METER)	
53	3-354-933-12	(WR80ES)....WINDOW (METER)	
54	3-354-931-11	KNOB (DIA.10)	
55	3-354-981-01	SPRING (SUS), RING	
56	3-359-932-01	KNOB (REC LEVEL)	
57	3-354-923-01	PLATE (VOL), ORNAMENTAL	
58	3-354-924-01	PLATE, INDICATION	
59	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
60	3-354-938-01	(WR820A)....BUTTON (B)	
60	3-354-938-11	(WR80ES)....BUTTON (B)	
61	3-354-937-01	BUTTON (A)	
62	3-354-932-01	BUTTON (POWER)	
63	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
64	3-359-907-01	BUTTON (EJECT)	
65	*3-359-935-01	LEVER (EJECT)	
66	3-362-234-01	SPRING, TENSION	
67	X-3340-195-1	HOLDER (R) ASSY, CASSETTE	69
68	X-3340-194-1	HOLDER (L) ASSY, CASSETTE	69
69	3-308-823-11	SPRING	
70	X-3346-313-1	RETAINER ASSY, CASSETTE	
71	3-354-960-01	SPRING (LOADING R), TORSION	
72	3-354-959-01	SPRING (LOADING L), TORSION	
73	7-621-773-95	SCREW +BVTT 2.6X6 (S)	
74	3-354-963-01	DAMPER	
75	3-354-956-01	LEVER (EJECT SAFETY LEVER R)	
76	3-354-962-01	SPRING (EJECT SAFETY SPRING R)	
77	*3-354-954-01	LEVER (LOCK LEVER R)	
78	3-354-957-01	JOINT (LOCK LEVER)	
79	*3-354-953-01	LEVER (LOCK LEVER L)	

Ref.No	Part No.	Description	Remarks
80	3-354-955-01	LEVER (EJECT SAFETY LEVER L)	
81	3-354-961-01	SPRING (EJECT SAFETY SPRING L)	
82	7-621-770-67	SCREW +BVTT 2.6X6 (S)	
83	*3-682-419-21	HOLDER, P.C.B	
84	9-911-844-XX	CUSHION	
85	*4-925-125-01	HOLDER, FL TUBE	
86	4-922-518-01	KNOB (TIMER)	
87	3-354-931-01	KNOB (DIA.10)	
88	3-356-935-01	SPRING	
89	7-682-547-04	SCREW +BVTT 3X6 (S)	
90	3-362-235-01	SPRING (REC LEVEL), RING	
91	3-354-937-11	(WR80ES)....BUTTON (A)	
92	3-359-967-01	COVER, PIN	
901	*A-2006-258-A	(WR820A)....MOUNTED PCB, AUDIO SYSTEM CONTROL	
901	*A-2006-260-A	(WR80ES)....MOUNTED PCB, AUDIO SYSTEM CONTROL	
904	*A-2006-259-A	(WR820A)....MOUNTED PCB, PANEL	
904	*A-2006-261-A	(WR80ES)....MOUNTED PCB, PANEL	
905	*1-575-850-11	WIRE, FLAT TYPE (9 CORE)	
906	*1-575-847-11	WIRE, FLAT TYPE (5 CORE)	
907	*1-575-851-11	(WR820A)....WIRE, FLAT TYPE (7 CORE)	
908	*1-575-848-11	WIRE, FLAT TYPE (5 CORE)	
909	*1-575-853-11	WIRE, FLAT TYPE (15 CORE)	
910	1-534-517-00	WIRE, FLAT TYPE (11 CORE)	
911	*1-575-780-11	WIRE, FLAT TYPE (7 CORE)	
912	*1-575-781-11	WIRE, FLAT TYPE (9 CORE)	
FL901	1-519-593-11	INDICATOR TUBE, FLUORESCENT	
J501	1-507-796-71	JACK (PHONES)	
RV502	1-241-133-11	RES, VAR, CARBON 50K/50K (REC LEVEL)	
RV503	1-238-085-11	REA, VAR, CARBON 20K/20K (PHONES LEVEL)	
S87	1-572-393-11	(WR820A)....SWITCH, LEAF (DIRECTION)	

6-3. MECHANISM SECTION-1

WR80ES (DECK A: TCM-190RA11)
(DECK B: TCM-190RB31)

WR820A (DECK A, B: TCM-190RB12)



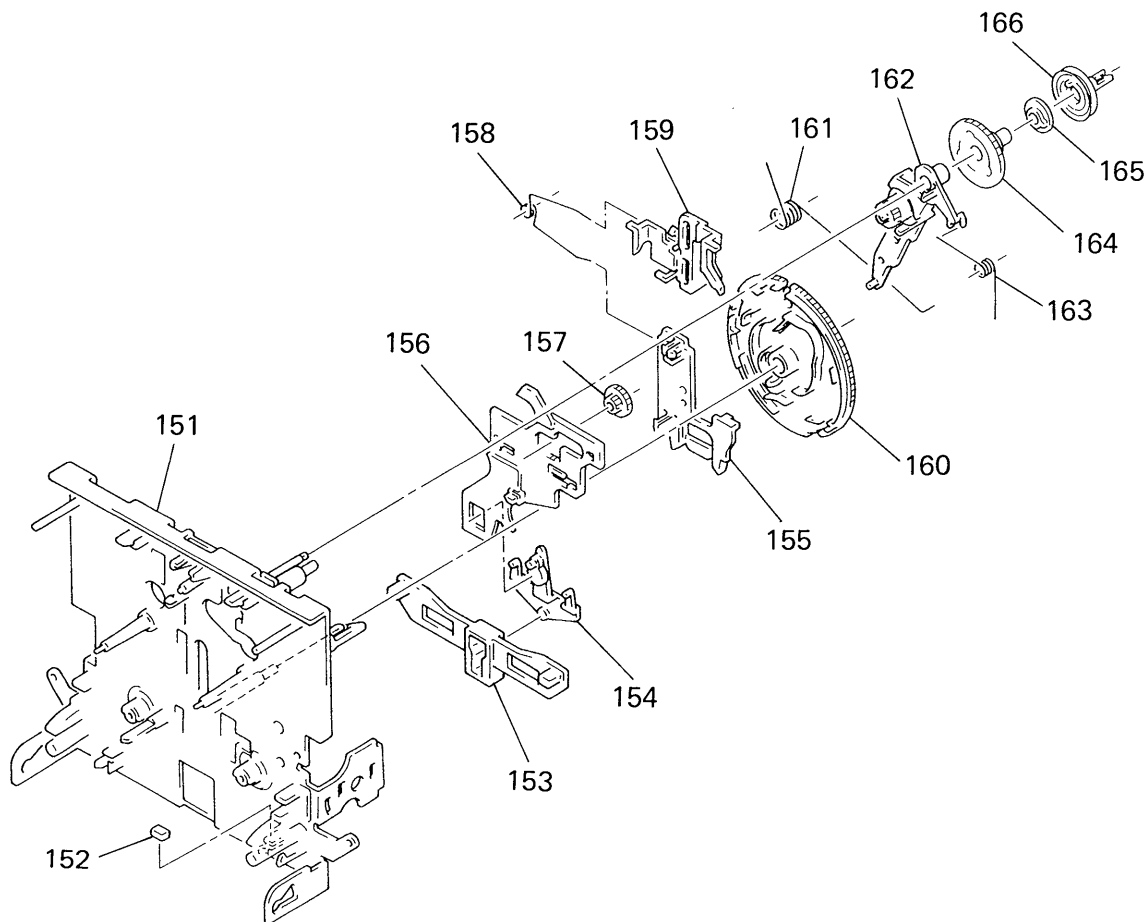
Ref.No	Part No.	Description	Remarks
101	3-359-455-01	SPRING, TORSION	
102	3-356-714-01	WASHER	
103	X-3359-408-1	LEVER (PINCH LEVER FWD) ASSY	
104	3-356-713-01	WASHER	
105	X-3359-409-1	LEVER (PINCH LEVER REV) ASSY	
106	X-3359-404-1	TABLE ASSY, REEL	
107	3-359-424-01	GEAR (REV GEAR)	
108	X-3359-406-1	FLYWHEEL (FWD) COMPLETE ASSY	
109	X-3359-410-1	FLYWHEEL (REV) ASSY	
110	3-359-417-01	BELT (FLAT), CAPSTAN	
111	3-359-450-01	PLATE, GROUND	
112	*3-359-436-01	BASE (THRUST RETAINER),FITTING	
113	3-359-466-01	BELT (FR), SQUARE	
114	3-575-321-00	RETAINER, THRUST, CAPSTAN	
115	3-359-430-01	SPRING(CASSETTE RETAINER),LEAF	
116	3-343-419-01	HOLDER (S SENSER A)	
117	7-627-556-08	SCREW +P 2.6X2.8	
118	7-621-775-00	SCREW +B 2.6X3	
119	3-359-414-01	SCREW (+PTPW 2X23)	

Ref.No	Part No.	Description	Remarks
913	*1-634-841-11	PC BOARD, SW-A	
914	*1-634-842-11	PC BOARD, MD (C)	
915	*1-634-840-11	(WR80ES : DECK A)....PC BOARD, MD (A)	
HP101	A-2003-418-A	(WR80ES : DECK A)....BASE ASSY, HEAD (PLAYBACK)	
HRPE101	A-2003-420-A	(WR80ES : DECK B)....BASE ASSY, HEAD (REC/PB/ERASE)	
HRPE101	A-2003-477-A	(WR820A)....BASE ASSY, HEAD (REC/PB/ERASE)	
IC81	8-719-939-23	PHOTO REFLECTOR GP-2S09-C	
IC82	8-719-939-23	(WR80ES)....PHOTO REFLECTOR GP-2S09-C	
M1	X-3359-417-1	(WR80ES : DECK A)....MOTOR ASSY (CAPSTAN)	
M2	A-2003-474-A	(WR80ES : DECK A)....MOTOR (REEL MOTOR) ASSY	
M3	X-3359-417-1	(WR80ES : DECK B, WR820A)....MOTOR ASSY (CAPSTAN)	
M4	A-2003-474-A	(WR80ES : DECK B, WR820A)....MOTOR (REEL MOTOR) ASSY	

6-4. MECHANISM SECTION-2

WR80ES (DECK A: TCM-190RA11)
(DECK B: TCM-190RB31)

WR820A (DECK A, B: TCM-190RB12)



Ref.No	Part No.	Description	Remarks	Ref.No	Part No.	Description	Remarks
151	X-3359-415-1	CHASSIS ASSY, MECHANICAL		159	3-359-429-01	SLIDER (BRAKE PLATE)	
152	3-359-469-01	SPACER		160	3-359-420-01	GEAR (CAM GEAR)	
153	*3-359-425-01	SLIDER (REVERSE SLIDER)		161	3-359-456-01	SPRING (TRIGGER SPRING), TORSION	
154	3-359-426-01	LEVER (REVERSE LEVER)		162	X-3359-405-1	LEVER (FR ARM) ASSY	
155	*3-359-427-01	SLIDER (REVERSE SLIDER)		163	3-359-453-01	SPRING (FR ARM), TORSION	
156	*3-359-415-01	SLIDER (TRIGGER SLIDER)		164	3-359-419-01	GEAR (FR GEAR)	
157	3-359-448-01	GEAR (TRIGGER)		165	3-359-421-01	CLUTCH (REEL DISK)	
158	3-359-454-01	SPRING, TORSION		166	3-359-418-01	PULLEY (FR PULLEY)	

SECTION 7 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.



CAPACITORS:MF: μ F, PF: μ MF.**RESISTORS**


- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORSIn each case, U: μ , for example:UA...: μ A..., UPA...: μ PA...,UPC...: μ PC, UPD...: μ PD...

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description
901	*A-2006-258-A	(WR820A)....MOUNTED PCB, AUDIO SYSTEM CONTROL
901	*A-2006-260-A	(WR80ES)....MOUNTED PCB, AUDIO SYSTEM CONTROL
902	*1-533-213-31	HOLDER, FUSE
903	 1-555-465-00	CORD, POWER
904	*A-2006-259-A	(WR820A)....MOUNTED PCB, PANEL
904	*A-2006-261-A	(WR80ES)....MOUNTED PCB, PANEL
905	*1-575-850-11	WIRE, FLAT TYPE (9 CORE)
906	*1-575-847-11	WIRE, FLAT TYPE (5 CORE)
907	*1-575-851-11	(WR820A)....WIRE, FLAT TYPE (7 CORE)
908	*1-575-848-11	WIRE, FLAT TYPE (5 CORE)
909	*1-575-853-11	WIRE, FLAT TYPE (15 CORE)
910	1-534-517-00	WIRE, FLAT TYPE (11 CORE)
911	*1-575-780-11	WIRE, FLAT TYPE (7 CORE)
912	*1-575-781-11	WIRE, FLAT TYPE (9 CORE)
913	*1-634-841-11	PC BOARD, SW-A
914	*1-634-842-11	PC BOARD, MD (C)
915	*1-634-840-11	(WR80ES : DECK A)....PC BOARD, MD (A)

CAPACITOR

C11	1-110-342-11	(WR820A)....MYLAR	390PF	5%	50V
C11	1-130-469-00	(WR80ES)....MYLAR	680PF	5%	50V
C11A	1-110-342-11	(WR80ES)....MYLAR	390PF	5%	50V
C12	1-136-157-00	FILM	0.022MF	5%	50V
C12A	1-136-157-00	(WR80ES)....FILM	0.022MF	5%	50V
C13	1-124-282-00	ELECT	22MF	20%	25V
C13A	1-124-282-00	(WR80ES)....ELECT	22MF	20%	25V
C21	1-110-342-11	(WR820A)....MYLAR	390PF	5%	50V
C21	1-130-469-00	(WR80ES)....MYLAR	680PF	5%	50V
C21A	1-110-342-11	(WR80ES)....MYLAR	390PF	5%	50V
C22	1-136-157-00	FILM	0.022MF	5%	50V
C22A	1-136-157-00	(WR80ES)....FILM	0.022MF	5%	50V
C23	1-124-282-00	ELECT	22MF	20%	25V
C23A	1-124-282-00	(WR80ES)....ELECT	22MF	20%	25V
C31A	1-124-443-00	(WR80ES)....ELECT	100MF	20%	10V
C31	1-124-443-00	ELECT	100MF	20%	10V
C32	1-124-443-00	ELECT	100MF	20%	10V
C32A	1-124-443-00	(WR80ES)....ELECT	100MF	20%	10V
C33	1-124-119-00	ELECT	330MF	20%	16V
C51	1-136-230-00	FILM	0.0022MF	5%	100V
C52	1-136-230-00	FILM	0.0022MF	5%	100V
C53	1-130-856-00	FILM	0.0068MF	5%	100V
C54	1-136-601-11	(WR820A)....FILM	0.01MF	5%	630V
C54	1-136-558-00	(WR80ES)....FILM	0.0039MF	5%	630V
C55	1-161-494-00	CERAMIC	0.022MF	25V	
C56	1-126-157-11	ELECT	10MF	20%	16V
C71	1-123-875-11	ELECT	10MF	20%	50V
C71A	1-123-875-11	(WR80ES)....ELECT	10MF	20%	50V
C72	1-123-875-11	ELECT	10MF	20%	50V
C72A	1-123-875-11	(WR80ES)....ELECT	10MF	20%	50V
C101	1-136-157-00	FILM	0.022MF	5%	50V
C102	1-162-294-31	CERAMIC	0.001MF	10%	50V
C103	1-161-375-00	CERAMIC	0.0022MF	20%	16V
C104	1-130-475-00	MYLAR	0.0022MF	5%	50V

C105	1-130-475-00	MYLAR	0.0022MF	5%	50V
C106	1-136-174-00	FILM	0.56MF	5%	50V
C107	1-136-171-00	FILM	0.33MF	5%	50V
C108	1-123-875-11	ELECT	10MF	20%	50V
C109	1-124-446-11	ELECT	47MF	20%	10V
C110	1-123-875-11	ELECT	10MF	20%	50V
C111	1-124-791-11	ELECT	1MF	20%	50V
C121	1-123-875-11	(WR820A)....ELECT	10MF	20%	50V
C122	1-123-875-11	(WR820A)....ELECT	10MF	20%	50V
C124	1-124-902-00	(WR820A)....ELECT	0.47MF	20%	50V
C131	1-123-382-00	ELECT	3.3MF	20%	50V
C151	1-123-875-11	ELECT	10MF	20%	50V
C152	1-123-875-11	ELECT	10MF	20%	50V
C154	1-124-902-00	ELECT	0.47MF	20%	50V
C181	1-126-096-11	ELECT	10MF	20%	25V
C201	1-136-157-00	FILM	0.022MF	5%	50V
C202	1-162-294-31	CERAMIC	0.001MF	10%	50V
C203	1-161-375-00	CERAMIC	0.0022MF	20%	16V
C204	1-130-475-00	MYLAR	0.0022MF	5%	50V
C205	1-130-475-00	MYLAR	0.0022MF	5%	50V
C206	1-136-174-00	FILM	0.56MF	5%	50V
C207	1-136-171-00	FILM	0.33MF	5%	50V
C208	1-123-875-11	ELECT	10MF	20%	50V
C209	1-124-446-11	ELECT	47MF	20%	10V
C210	1-123-875-11	ELECT	10MF	20%	50V
C211	1-124-791-11	ELECT	1MF	20%	50V
C221	1-123-875-11	(WR820A)....ELECT	10MF	20%	50V
C222	1-123-875-11	(WR820A)....ELECT	10MF	20%	50V
C224	1-124-902-00	(WR820A)....ELECT	0.47MF	20%	50V
C231	1-123-382-00	ELECT	3.3MF	20%	50V
C251	1-123-875-11	ELECT	10MF	20%	50V
C252	1-123-875-11	ELECT	10MF	20%	50V
C254	1-124-902-00	ELECT	0.47MF	20%	50V
C281	1-126-096-11	ELECT	10MF	20%	25V
C391	1-107-210-00	(WR80ES)....MICA	22PF	5%	500V
C391	1-136-273-91	(WR820A)....FILM	75PF	5%	630V
C392	1-162-285-31	(WR80ES)....CERAMIC	180PF	10%	50V
C392	1-162-288-31	(WR820A)....CERAMIC	330PF	10%	50V
C393	1-130-468-00	(WR80ES)....MYLAR	560PF	5%	50V
C393	1-130-472-00	(WR820A)....MYLAR	0.0012MF	5%	50V
C394	1-136-433-11	FILM	100PF	5%	630V
C395	1-136-272-00	(WR80ES)....FILM	68PF	5%	630V
C395	1-136-437-11	(WR820A)....FILM	220PF	5%	630V
C396	1-136-165-00	FILM	0.1MF	5%	50V
C397	1-136-157-00	FILM	0.022MF	5%	50V
C398	1-136-153-00	FILM	0.01MF	5%	50V
C491	1-107-210-00	(WR80ES)....MICA	22PF	5%	500V
C491	1-136-273-91	(WR820A)....FILM	75PF	5%	630V
C492	1-162-285-31	(WR80ES)....CERAMIC	180PF	10%	50V
C492	1-162-288-31	(WR820A)....CERAMIC	330PF	10%	50V
C493	1-130-468-00	(WR80ES)....MYLAR	560PF	5%	50V

Ref.No	Part No.	Description			
C493	1-130-472-00	(WR820A)....MYLAR	0.0012MF	5%	50V
C494	1-136-433-11	FILM	100PF	5%	630V
C495	1-136-272-00	(WR80ES)....FILM	68PF	5%	630V
C495	1-136-437-11	(WR820A)....FILM	220PF	5%	630V
C496	1-136-165-00	FILM	0.1MF	5%	50V
C497	1-136-157-00	FILM	0.022MF	5%	50V
C498	1-136-153-00	FILM	0.01MF	5%	50V
C506	1-124-791-11	ELECT	1MF	20%	50V
C542	1-124-925-11	(WR820A)....ELECT	2.2MF	20%	50V
C591	1-124-473-11	ELECT	1000MF	20%	10V
C592	1-124-589-11	ELECT	47MF	20%	16V
C593	1-124-589-11	ELECT	47MF	20%	16V
C599	1-124-925-11	ELECT	2.2MF	20%	50V
C601	1-124-925-11	ELECT	2.2MF	20%	50V
C602	1-162-286-31	CERAMIC	220PF	10%	50V
C603	1-162-286-31	CERAMIC	220PF	10%	50V
C604	1-124-925-11	ELECT	2.2MF	20%	50V
C605	1-136-157-00	FILM	0.022MF	5%	50V
C608	1-124-925-11	ELECT	2.2MF	20%	50V
C691	1-107-046-00	MICA	4.7PF	0.5PF	500V
C692	1-124-446-11	ELECT	47MF	20%	10V
C693	1-126-101-11	ELECT	100MF	20%	16V
C694	1-124-902-00	ELECT	0.47MF	20%	50V
C701	1-124-443-00	ELECT	100MF	20%	6.3V
C702	1-124-122-11	ELECT	100MF	20%	35V
C703	1-124-925-11	ELECT	2.2MF	20%	50V
C704	1-124-911-11	ELECT	220MF	20%	50V
C705	1-124-927-11	ELECT	4.7MF	20%	50V
C707	1-124-925-11	ELECT	2.2MF	20%	50V
C708	1-124-564-11	ELECT	4700MF	20%	25V
C709	1-124-446-11	ELECT	47MF	20%	10V
C710	1-124-473-11	ELECT	1000MF	20%	10V
C711	1-124-473-11	ELECT	1000MF	20%	10V
C712	1-126-946-11	ELECT	6800MF	20%	25V
C713	1-161-494-00	CERAMIC	0.022MF		25V
C801	1-124-443-00	ELECT	100MF	20%	6.3V
C802	1-164-159-11	CERAMIC	0.1MF		50V
C803	1-162-306-11	CERAMIC	0.01MF	20%	16V
C804	1-124-443-00	ELECT	100MF	20%	6.3V
C805	1-124-925-11	ELECT	2.2MF	20%	50V
C806	1-136-165-00	FILM	0.1MF	5%	50V
C807	1-136-165-00	FILM	0.1MF	5%	50V
C851	1-124-902-00	ELECT	0.47MF	20%	50V
C861	1-162-294-31	CERAMIC	0.001MF	10%	50V
C901	1-164-159-11	CERAMIC	0.1MF		50V
C902	1-126-154-11	ELECT	47MF	20%	6.3V
C904	1-162-306-11	CERAMIC	0.01MF	20%	16V
C905	1-124-927-11	ELECT	4.7MF	20%	50V
C0391	1-136-273-91	(WR820A)....FILM	75PF	5%	630V
C0392	1-162-288-31	(WR820A).... CERAMIC	330PF	10%	50V
C0393	1-130-472-00	(WR820A)....MYLAR	0.0012MF	5%	50V
C0394	1-136-433-11	(WR820A)....FILM	100PF	5%	630V
C0395	1-136-437-11	(WR820A)....FILM	220PF	5%	630V
C0396	1-136-165-00	(WR820A)....FILM	0.1MF	5%	50V
C0397	1-136-157-00	(WR820A)....FILM	0.022MF	5%	50V
C0398	1-136-153-00	(WR820A)....FILM	0.01MF	5%	50V
C0491	1-136-273-91	(WR820A)....FILM	75PF	5%	630V
C0492	1-162-288-31	(WR820A).... CERAMIC	330PF	10%	50V
C0493	1-130-472-00	(WR820A)....MYLAR	0.0012MF	5%	50V
C0494	1-136-433-11	(WR820A)....FILM	100PF	5%	630V
C0495	1-136-437-11	(WR820A)....FILM	220PF	5%	630V
C0496	1-136-165-00	(WR820A)....FILM	0.1MF	5%	50V
C0497	1-136-157-00	(WR820A)....FILM	0.022MF	5%	50V
C0498	1-136-153-00	(WR820A)....FILM	0.01MF	5%	50V

Ref.No	Part No.	Description			
C0691	1-107-046-00	(WR820A)....MICA	4.7PF	0.5PF	500V
C0692	1-124-446-11	(WR820A)....ELECT	47MF	20%	10V
C0693	1-126-101-11	(WR820A)....ELECT	100MF	20%	16V
C0694	1-124-902-00	(WR820A)....ELECT	0.47MF	20%	50V
CN501	*1-568-824-11	SOCKET, CONNECTOR 5P			
CN502	*1-568-824-11	SOCKET, CONNECTOR 5P			
CN503	*1-568-826-11	(WR820A)....SOCKET, CONNECTOR 7P			
CN504	*1-568-826-11	SOCKET, CONNECTOR 7P			
CN505	*1-568-824-11	SOCKET, CONNECTOR 5P			
CN506	*1-568-848-11	SOCKET, CONNECTOR 5P			
CN601	*1-564-509-11	PLUG, CONNECTOR 6P			
CN691	*1-568-826-11	SOCKET, CONNECTOR 7P			
CN701	*1-564-338-00	PIN, CONNECTOR 4P			
CN703	*1-564-510-11	PLUG, CONNECTOR 7P			
CN801	*1-568-830-11	SOCKET, CONNECTOR 11P			
CN802	*1-568-828-11	SOCKET, CONNECTOR 9P			
CN803	*1-568-828-11	SOCKET, CONNECTOR 9P			
CN804	*1-568-828-11	(WR820A)....SOCKET, CONNECTOR 9P			
CN804	*1-568-826-11	(WR80ES)....SOCKET, CONNECTOR 7P			
CN805	*1-568-828-11	SOCKET, CONNECTOR 9P			
CN806	*1-568-834-11	SOCKET, CONNECTOR 15P			
CN901	*1-568-834-11	SOCKET, CONNECTOR 15P			
CN902	*1-568-830-11	SOCKET, CONNECTOR 11P			
CN904	*1-564-498-11	PIN, CONNECTOR 5P			
CN905	*1-564-498-11	PIN, CONNECTOR 5P			
CN906	*1-564-498-11	PIN, CONNECTOR 5P			
CN0691	*1-568-826-11	(WR820A)....SOCKET, CONNECTOR 7P			
CNP31	*1-568-824-11	SOCKET, CONNECTOR 5P			
CNP31A	*1-568-824-11	(WR80ES)....SOCKET, CONNECTOR 5P			
CNP32	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CNP32A	*1-564-706-11	(WR80ES)....PIN, CONNECTOR (SMALL TYPE) 4P			
CNP34	*1-565-344-11	PIN, CONNECTOR (PC BOARD) 8P			
CNP35	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
CNP71	*1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
CNP71A	*1-564-705-11	(WR80ES)....PIN, CONNECTOR (SMALL TYPE) 3P			
CNP72	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
CNP72A	*1-564-706-11	(WR80ES)....PIN, CONNECTOR (SMALL TYPE) 4P			
CNP73	*1-568-828-11	SOCKET, CONNECTOR 9P			
CNP73A	*1-568-826-11	(WR80ES)....SOCKET, CONNECTOR 7P			
CNP75	*1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CNP81	*1-568-852-11	SOCKET, CONNECTOR 9P			
CNP691	*1-565-347-11	SOCKET, CONNECTOR (PC BOARD)8P			
CNP0691	*1-565-347-11	(WR820A)....SOCKET, CONNECTOR (PC BOARD)8P			
CP901	1-233-125-11	COMPOSITION CIRCUIT BLOCK (10KX4)			
CP902	1-233-125-11	COMPOSITION CIRCUIT BLOCK (10KX4)			
CP903	1-233-219-11	COMPOSITION CIRCUIT BLOCK			
D31	8-719-107-94	DIODE 1SS202-1			
D131	8-719-107-94	DIODE 1SS202-1			
D231	8-719-107-94	DIODE 1SS202-1			
D501	8-719-107-94	DIODE 1SS202-1			
D502	8-719-107-94	DIODE 1SS202-1			
D503	8-719-933-54	DIODE HZS9A2L			
D571	8-719-107-94	DIODE 1SS202-1			
D572	8-719-001-36	DIODE UZL-11L2			
D601	8-719-107-94	DIODE 1SS202-1			
D602	8-719-107-94	DIODE 1SS202-1			
D701	8-719-000-78	DIODE UZL-7L2			
D702	8-719-107-94	DIODE 1SS202-1			
D703	8-719-200-77	DIODE 10E2N			
D704	8-719-200-77	DIODE 10E2N			
D705	8-719-200-77	DIODE 10E2N			
D706	8-719-107-94	DIODE 1SS202-1			
D707	8-719-200-77	DIODE 10E2N			
D708	8-719-200-77	DIODE 10E2N			

Ref.No	Part No.	Description
D709	8-719-933-33	DIODE HZS6A1L
D710	8-719-200-77	DIODE 10E2N
D711	8-719-200-77	DIODE 10E2N
D712	8-719-933-33	DIODE HZS6A1L
D713	8-719-000-93	DIODE UZL-7H1
D801	8-719-107-94	DIODE 1SS202-1
D811	8-719-107-94	DIODE 1SS202-1
D812	8-719-107-94	DIODE 1SS202-1
D902	8-719-301-39	(WR820A)....DIODE SEL2210S
F701	△, 1-532-742-11	FUSE, GLASS TUBE (1.6A/125V)
F702	△, 1-532-742-11	FUSE, GLASS TUBE (1.6A/125V)
FL901	1-519-593-11	INDICATOR TUBE, FLUORESCENT
HP101	A-2003-418-A	(WR80ES : DECK A)....BASE ASSY, HEAD (PLAYBACK)
HRPE101	A-2003-420-A	(WR80ES : DECK B)....BASE ASSY, HEAD (REC/PB/ERASE)
HRPE101	A-2003-477-A	(WR820A)....BASE ASSY, HEAD (REC/PB/ERASE)
IC31	8-759-111-44	IC UPC4570C-1
IC31A	8-759-111-44	(WR80ES)....IC UPC4570C-1
IC81	8-719-939-23	PHOTO REFLECTOR GP-2S09-C
IC82	8-719-939-23	(WR80ES)....PHOTO REFLECTOR GP-2S09-C
IC501	8-752-036-34	IC CXA1330S
IC503	8-759-945-58	IC RC4558P
IC504	8-759-945-58	IC RC4558P
IC506	8-759-040-53	IC MC14053BCP
IC509	8-752-038-02	IC CXA1198AP
IC510	8-759-208-06	IC MC14051BCP
IC551	8-752-038-02	(WR820A)....IC CXA1198AP
IC601	8-759-634-50	IC M5218AL
IC691	8-759-106-56	IC UPC1297CA
IC701	8-759-945-58	IC RC4558P
IC802	8-759-634-83	IC M50925-446SP
IC803	8-759-634-84	IC M50255P
IC804	8-759-240-50	IC MC14050BCP
IC805	8-759-207-05	IC TA7272P
IC806	8-759-208-08	IC MC14052BCP
IC807	8-759-208-08	(WR820A)....IC MC14052BCP
IC901	8-759-634-68	IC M50941-358SP
IC902	8-741-100-48	IC SBX1610-59
IC0691	8-759-106-56	(WR820A)....IC UPC1297CA
J301	1-565-258-11	JACK, PIN 4P (LINE IN/OUT)
J501	1-507-796-71	JACK (PHONES)
L391	1-410-780-11	INDUCTOR 27MMH
L491	1-410-780-11	INDUCTOR 27MMH
L0391	1-410-780-11	(WR820A)....INDUCTOR 27MMH
L0491	1-410-780-11	(WR820A)....INDUCTOR 27MMH
LPF101	1-235-980-11	(WR820A)....FILTER, LOW PASS
LPF101	1-236-475-11	(WR80ES)....FILTER, LOW PASS
LPF201	1-235-980-11	(WR820A)....FILTER, LOW PASS
LPF201	1-236-475-11	(WR80ES)....FILTER, LOW PASS
M1	X-3359-417-1	(WR80ES : DECK A)....MOTOR ASSY (CAPSTAN)
M2	A-2003-474-A	(WR80ES : DECK A)....MOTOR (REEL MOTOR) ASSY
M3	X-3359-417-1	(WR80ES : DECK B, WR820A)....MOTOR ASSY (CAPSTAN)
M4	A-2003-474-A	(WR80ES : DECK B, WR820A)....MOTOR (REEL MOTOR) ASSY
Q51	8-729-194-57	TRANSISTOR 2SC945-P
Q52	8-729-194-57	TRANSISTOR 2SC945-P
Q53	8-729-801-84	TRANSISTOR 2SB1013-4
Q71	8-729-820-16	TRANSISTOR 2SA1317-S
Q71A	8-729-820-16	(WR80ES)....TRANSISTOR 2SA1317-S

Ref.No	Part No.	Description
Q101	8-729-900-74	TRANSISTOR DTC143TS
Q102	8-729-900-74	TRANSISTOR DTC143TS
Q121	8-729-821-31	(WR820A)....TRANSISTOR 2SD1012-FG
Q171	8-729-821-31	TRANSISTOR 2SD1012-FG
Q201	8-729-900-74	TRANSISTOR DTC143TS
Q202	8-729-900-74	TRANSISTOR DTC143TS
Q221	8-729-821-31	(WR820A)....TRANSISTOR 2SD1012-FG
Q271	8-729-821-31	TRANSISTOR 2SD1012-FG
Q501	8-729-900-65	TRANSISTOR DTA144ES
Q502	8-729-900-65	TRANSISTOR DTA144ES
Q503	8-729-900-65	TRANSISTOR DTA144ES
Q504	8-729-900-65	TRANSISTOR DTA144ES
Q505	8-729-900-89	TRANSISTOR DTC144ES
Q521	8-729-900-61	(WR820A)....TRANSISTOR DTA114ES
Q551	8-729-900-61	TRANSISTOR DTA114ES
Q552	8-729-821-31	TRANSISTOR 2SD1012-FG
Q553	8-729-821-31	TRANSISTOR 2SD1012-FG
Q571	8-729-900-65	TRANSISTOR DTA144ES
Q572	8-729-821-04	TRANSISTOR 2SA1317-STU
Q601	8-729-900-89	TRANSISTOR DTC144ES
Q701	8-729-920-98	TRANSISTOR 2SD1761-EF
Q702	8-729-620-05	TRANSISTOR 2SC2603-EF
Q703	8-729-821-04	TRANSISTOR 2SA1317-STU
Q704	8-729-920-97	TRANSISTOR 2SB1187-EF
Q705	8-729-920-97	TRANSISTOR 2SB1187-EF
Q706	8-729-900-85	TRANSISTOR DTC144WS
Q707	8-729-920-98	TRANSISTOR 2SD1761-EF
Q708	8-729-900-89	TRANSISTOR DTC144ES
Q801	8-729-801-84	TRANSISTOR 2SB1013-4
Q802	8-729-801-84	TRANSISTOR 2SB1013-4
Q803	8-729-900-61	TRANSISTOR DTA114ES
Q804	8-729-900-80	TRANSISTOR DTC114ES
Q805	8-729-900-61	(WR820A)....TRANSISTOR DTA114ES
Q806	8-729-900-61	TRANSISTOR DTA114ES
Q807	8-729-821-04	TRANSISTOR 2SA1317-STU
Q851	8-729-900-61	(WR820A)....TRANSISTOR DTA114ES
Q852	8-729-900-89	(WR820A)....TRANSISTOR DTC144ES
Q853	8-729-900-61	TRANSISTOR DTA114ES
Q854	8-729-900-89	TRANSISTOR DTC144ES
Q891	8-729-900-61	TRANSISTOR DTA114ES
Q901	8-729-900-65	TRANSISTOR DTA144ES
Q902	8-729-620-05	TRANSISTOR 2SC2603-EF
Q903	8-729-620-05	TRANSISTOR 2SC2603-EF
Q904	8-729-900-74	TRANSISTOR DTC143TS
Q905	8-729-620-05	TRANSISTOR 2SC2603-EF
Q906	8-729-620-05	TRANSISTOR 2SC2603-EF
Q907	8-729-620-05	TRANSISTOR 2SC2603-EF
Q908	8-729-620-05	TRANSISTOR 2SC2603-EF

RESISTOR

R11	1-247-881-00	(WR820A).... CARBON	120K	5%	1/4W
R11	1-249-435-11	(WR80ES).... CARBON	33K	5%	1/4W
R11A	1-247-881-00	(WR80ES).... CARBON	120K	5%	1/4W
R12	1-249-404-00	(WR80ES).... CARBON	82	5%	1/4W
R12	1-249-405-11	(WR820A).... CARBON	100	5%	1/4W
R12A	1-249-405-11	(WR80ES).... CARBON	100	5%	1/4W
R13	1-247-882-11	CARBON	130K	5%	1/4W
R13A	1-247-882-11	(WR80ES).... CARBON	130K	5%	1/4W
R14	1-249-426-11	CARBON	5.6K	5%	1/4W

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description				
R14A	1-249-426-11	(WR80ES).... CARBON	56K	5%	1/4W	
R21	1-247-881-00	(WR820A).... CARBON	120K	5%	1/4W	
R21	1-249-435-11	(WR80ES).... CARBON	33K	5%	1/4W	
R21A	1-247-881-00	(WR80ES).... CARBON	120K	5%	1/4W	
R22	1-249-404-00	(WR80ES).... CARBON	82	5%	1/4W	
R22	1-249-405-11	(WR820A).... CARBON	100	5%	1/4W	
R22A	1-249-405-11	(WR80ES).... CARBON	100	5%	1/4W	
R23	1-247-882-11	CARBON	130K	5%	1/4W	
R23A	1-247-882-11	(WR80ES).... CARBON	130K	5%	1/4W	
R24	1-249-426-11	CARBON	56K	5%	1/4W	
R24A	1-249-426-11	(WR80ES).... CARBON	56K	5%	1/4W	
R31	1-249-409-11	CARBON	220	5%	1/4W	
R31A	1-249-409-11	(WR80ES).... CARBON	220	5%	1/4W	
R32	1-249-409-11	CARBON	220	5%	1/4W	
R32A	1-249-409-11	(WR80ES).... CARBON	220	5%	1/4W	
R51	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W	
R51	1-249-441-11	(WR820A).... CARBON	100K	5%	1/4W	
R52	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W	
R52	1-249-441-11	(WR820A).... CARBON	100K	5%	1/4W	
R53	1-249-429-11	CARBON	10K	5%	1/4W	
R54	△.1-212-849-00	(WR80ES).... FUSIBLE	4.7	5%	1/4W	F
R54	△.1-212-851-00	(WR820A).... FUSIBLE	5.6	5%	1/4W	F
R55	1-249-429-11	CARBON	10K	5%	1/4W	
R71	1-247-864-11	(WR820A).... CARBON	24K	5%	1/4W	
R71A	1-249-433-11	(WR80ES).... CARBON	22K	5%	1/4W	
R72	1-249-433-11	CARBON	22K	5%	1/4W	
R72A	1-249-433-11	(WR80ES).... CARBON	22K	5%	1/4W	
R73	1-249-437-11	CARBON	47K	5%	1/4W	
R73A	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W	
R74	1-249-437-11	CARBON	47K	5%	1/4W	
R74A	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W	
R81	1-249-414-11	CARBON	560	5%	1/4W	
R82	1-247-818-11	CARBON	300	5%	1/4W	
R83	1-247-834-11	CARBON	1.3K	5%	1/4W	
R84	1-249-417-11	CARBON	1K	5%	1/4W	
R85	1-249-408-11	(WR820A).... CARBON	180	5%	1/4W	
R86	1-249-408-11	(WR80ES).... CARBON	180	5%	1/4W	
R101	1-249-423-11	CARBON	3.3K	5%	1/4W	
R102	1-247-887-00	CARBON	220K	5%	1/4W	
R103	1-249-441-11	CARBON	100K	5%	1/4W	
R104	1-249-423-11	CARBON	3.3K	5%	1/4W	
R105	1-249-428-11	CARBON	8.2K	5%	1/4W	
R106	1-247-864-11	CARBON	24K	5%	1/4W	
R107	1-249-414-11	CARBON	560	5%	1/4W	
R119	1-249-421-11	CARBON	2.2K	5%	1/4W	

Ref.No	Part No.	Description				
R121	1-249-425-11	(WR820A).... CARBON	4.7K	5%	1/4W	
R124	1-249-426-11	(WR820A).... CARBON	56K	5%	1/4W	
R125	1-249-421-11	(WR820A).... CARBON	2.2K	5%	1/4W	
R126	1-249-429-11	(WR820A).... CARBON	10K	5%	1/4W	
R131	1-249-408-11	CARBON	180	5%	1/4W	
R132	1-249-434-11	CARBON	27K	5%	1/4W	
R133	1-249-421-11	CARBON	2.2K	5%	1/4W	
R134	1-249-435-11	CARBON	33K	5%	1/4W	
R151	1-249-425-11	CARBON	4.7K	5%	1/4W	
R153	1-249-421-11	CARBON	2.2K	5%	1/4W	
R155	1-249-426-11	CARBON	56K	5%	1/4W	
R156	1-249-429-11	CARBON	10K	5%	1/4W	
R171	1-249-433-11	CARBON	22K	5%	1/4W	
R172	1-249-417-11	CARBON	1K	5%	1/4W	
R173	1-247-858-11	CARBON	13K	5%	1/4W	
R174	1-249-421-11	CARBON	2.2K	5%	1/4W	
R181	1-249-433-11	CARBON	22K	5%	1/4W	
R182	1-249-421-11	CARBON	2.2K	5%	1/4W	
R183	1-249-433-11	CARBON	22K	5%	1/4W	
R184	1-249-409-11	CARBON	220	5%	1/4W	
R191	1-249-420-11	CARBON	1.8K	5%	1/4W	
R201	1-249-423-11	CARBON	3.3K	5%	1/4W	
R202	1-247-887-00	CARBON	220K	5%	1/4W	
R203	1-249-441-11	CARBON	100K	5%	1/4W	
R204	1-249-423-11	CARBON	3.3K	5%	1/4W	
R205	1-249-428-11	CARBON	8.2K	5%	1/4W	
R206	1-247-864-11	CARBON	24K	5%	1/4W	
R207	1-249-414-11	CARBON	560	5%	1/4W	
R219	1-249-421-11	CARBON	2.2K	5%	1/4W	
R221	1-249-425-11	(WR820A).... CARBON	4.7K	5%	1/4W	
R224	1-249-426-11	(WR820A).... CARBON	56K	5%	1/4W	
R225	1-249-421-11	(WR820A).... CARBON	2.2K	5%	1/4W	
R226	1-249-429-11	(WR820A).... CARBON	10K	5%	1/4W	
R231	1-249-408-11	CARBON	180	5%	1/4W	
R232	1-249-434-11	CARBON	27K	5%	1/4W	
R233	1-249-421-11	CARBON	2.2K	5%	1/4W	
R234	1-249-435-11	CARBON	33K	5%	1/4W	
R251	1-249-425-11	CARBON	4.7K	5%	1/4W	
R253	1-249-421-11	CARBON	2.2K	5%	1/4W	
R255	1-249-426-11	CARBON	56K	5%	1/4W	
R256	1-249-429-11	CARBON	10K	5%	1/4W	
R271	1-249-433-11	CARBON	22K	5%	1/4W	
R272	1-249-417-11	CARBON	1K	5%	1/4W	
R273	1-247-858-11	CARBON	13K	5%	1/4W	
R274	1-249-421-11	CARBON	2.2K	5%	1/4W	
R281	1-249-433-11	CARBON	22K	5%	1/4W	
R282	1-249-421-11	CARBON	2.2K	5%	1/4W	
R283	1-249-433-11	CARBON	22K	5%	1/4W	
R284	1-249-409-11	CARBON	220	5%	1/4W	
R291	1-249-420-11	CARBON	1.8K	5%	1/4W	
R391	1-249-428-11	(WR80ES).... CARBON	8.2K	5%	1/4W	
R391	1-249-430-11	(WR820A).... CARBON	12K	5%	1/4W	
R392	1-247-883-00	(WR820A).... CARBON	150K	5%	1/4W	
R392	1-247-884-11	(WR80ES).... CARBON	160K	5%	1/4W	
R393	1-249-393-11	CARBON	10	5%	1/4W	

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description			
R394	1-249-431-11	(WR820A).... CARBON	15K	5%	1/4W
R394	1-249-432-11	(WR80ES).... CARBON	18K	5%	1/4W
R395	1-247-854-11	(WR80ES).... CARBON	9.1K	5%	1/4W
R395	1-247-864-11	(WR820A).... CARBON	24K	5%	1/4W
R491	1-249-428-11	(WR80ES).... CARBON	8.2K	5%	1/4W
R491	1-249-430-11	(WR820A).... CARBON	12K	5%	1/4W
R492	1-247-883-00	(WR820A).... CARBON	150K	5%	1/4W
R492	1-247-884-11	(WR80ES).... CARBON	160K	5%	1/4W
R493	1-249-393-11	(WR820A).... CARBON	10	5%	1/4W
R494	1-249-431-11	(WR820A).... CARBON	15K	5%	1/4W
R494	1-249-432-11	(WR80ES).... CARBON	18K	5%	1/4W
R495	1-247-854-11	(WR80ES).... CARBON	9.1K	5%	1/4W
R495	1-247-864-11	(WR820A).... CARBON	24K	5%	1/4W
R501	1-249-429-11	(WR820A).... CARBON	10K	5%	1/4W
R502	1-249-434-11	(WR820A).... CARBON	27K	5%	1/4W
R503	1-249-417-11	(WR820A).... CARBON	1K	5%	1/4W
R504	1-249-429-11	(WR820A).... CARBON	10K	5%	1/4W
R505	1-249-429-11	(WR820A).... CARBON	10K	5%	1/4W
R506	1-249-429-11	(WR820A).... CARBON	10K	5%	1/4W
R507	1-249-441-11	(WR820A).... CARBON	100K	5%	1/4W
R521	1-249-440-11	(WR820A).... CARBON	82K	5%	1/4W
R522	1-247-876-11	(WR820A).... CARBON	75K	5%	1/4W
R523	1-247-882-11	(WR820A).... CARBON	130K	5%	1/4W
R524	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W
R525	1-249-434-11	(WR820A).... CARBON	27K	5%	1/4W
R526	1-247-868-11	(WR820A).... CARBON	36K	5%	1/4W
R527	1-247-887-00	(WR820A).... CARBON	220K	5%	1/4W
R528	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W
R529	1-247-883-00	(WR820A).... CARBON	150K	5%	1/4W
R530	1-247-882-11	(WR820A).... CARBON	130K	5%	1/4W
R531	1-247-868-11	(WR820A).... CARBON	36K	5%	1/4W
R532	1-249-437-11	(WR820A).... CARBON	47K	5%	1/4W
R533	1-247-890-11	(WR820A).... CARBON	300K	5%	1/4W
R534	1-247-882-11	(WR820A).... CARBON	130K	5%	1/4W
R535	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W
R536	1-247-868-11	(WR820A).... CARBON	36K	5%	1/4W
R537	1-247-870-11	(WR820A).... CARBON	43K	5%	1/4W
R538	1-247-872-11	(WR820A).... CARBON	51K	5%	1/4W
R539	1-247-864-11	(WR820A).... CARBON	24K	5%	1/4W

Ref.No	Part No.	Description			
R541	1-249-441-11	(WR820A).... CARBON	100K	5%	1/4W
R542	1-249-417-11	(WR820A).... CARBON	1K	5%	1/4W
R551	1-249-438-11	(WR80ES).... CARBON	56K	5%	1/4W
R551	1-249-440-11	(WR820A).... CARBON	82K	5%	1/4W
R552	1-247-876-11	(WR820A).... CARBON	75K	5%	1/4W
R552	1-249-439-11	(WR80ES).... CARBON	68K	5%	1/4W
R553	1-247-882-11	(WR820A).... CARBON	130K	5%	1/4W
R553	1-247-883-11	(WR80ES).... CARBON	150K	5%	1/4W
R554	1-247-876-11	(WR820A).... CARBON	75K	5%	1/4W
R554	1-249-439-11	(WR80ES).... CARBON	68K	5%	1/4W
R555	1-249-435-11	(WR80ES).... CARBON	33K	5%	1/4W
R556	1-249-436-11	(WR80ES).... CARBON	39K	5%	1/4W
R557	1-247-876-11	(WR80ES).... CARBON	75K	5%	1/4W
R557	1-247-887-00	(WR820A).... CARBON	220K	5%	1/4W
R558	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W
R558	1-247-876-11	(WR80ES).... CARBON	75K	5%	1/4W
R559	1-247-883-00	(WR820A).... CARBON	150K	5%	1/4W
R560	1-247-882-11	(WR820A).... CARBON	130K	5%	1/4W
R560	1-249-438-11	(WR80ES).... CARBON	56K	5%	1/4W
R561	1-247-870-11	(WR80ES).... CARBON	43K	5%	1/4W
R562	1-249-438-11	(WR820A).... CARBON	56K	5%	1/4W
R562	1-249-439-11	(WR80ES).... CARBON	68K	5%	1/4W
R563	1-247-887-11	(WR80ES).... CARBON	220K	5%	1/4W
R563	1-247-890-11	(WR820A).... CARBON	300K	5%	1/4W
R564	1-247-882-11	(WR820A).... CARBON	130K	5%	1/4W
R565	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W
R566	1-247-862-11	(WR80ES).... CARBON	20K	5%	1/4W
R566	1-249-436-11	(WR820A).... CARBON	39K	5%	1/4W
R567	1-247-872-11	(WR820A).... CARBON	51K	5%	1/4W
R567	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W
R568	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W
R568	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W
R569	1-247-880-11	(WR820A).... CARBON	110K	5%	1/4W
R570	1-247-868-11	(WR820A).... CARBON	36K	5%	1/4W
R570	1-249-435-11	(WR80ES).... CARBON	33K	5%	1/4W
R571	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W
R571	1-249-439-11	(WR80ES).... CARBON	68K	5%	1/4W
R572	1-247-866-11	(WR80ES).... CARBON	30K	5%	1/4W
R572	1-247-870-11	(WR820A).... CARBON	43K	5%	1/4W

Ref.No	Part No.	Description				
R573	1-247-868-11	(WR820A).... CARBON	36K	5%	1/4W	
R573	1-249-435-11	(WR80ES).... CARBON	33K	5%	1/4W	
R574	1-247-860-11	(WR80ES).... CARBON	16K	5%	1/4W	
R574	1-249-433-11	(WR820A).... CARBON	22K	5%	1/4W	
R575	1-247-880-11	(WR820A).... CARBON	110K	5%	1/4W	
R575	1-247-881-11	(WR80ES).... CARBON	120K	5%	1/4W	
R576	1-249-435-11	(WR80ES).... CARBON	33K	5%	1/4W	
R576	1-249-437-11	(WR820A).... CARBON	47K	5%	1/4W	
R577	1-249-438-11	(WR820A).... CARBON	56K	5%	1/4W	
R577	1-249-439-11	(WR80ES).... CARBON	68K	5%	1/4W	
R578	1-247-866-11	(WR80ES).... CARBON	30K	5%	1/4W	
R578	1-247-870-11	(WR820A).... CARBON	43K	5%	1/4W	
R579	1-247-870-11	(WR80ES).... CARBON	43K	5%	1/4W	
R579	1-249-438-11	(WR820A).... CARBON	56K	5%	1/4W	
R580	1-247-866-11	(WR80ES).... CARBON	30K	5%	1/4W	
R580	1-249-436-11	(WR820A).... CARBON	39K	5%	1/4W	
R581	1-247-880-11	(WR80ES).... CARBON	110K	5%	1/4W	
R581	1-247-881-00	(WR820A).... CARBON	120K	5%	1/4W	
R582	1-247-866-11	(WR80ES).... CARBON	30K	5%	1/4W	
R582	1-247-872-11	(WR820A).... CARBON	51K	5%	1/4W	
R583	1-249-437-11	(WR820A).... CARBON	47K	5%	1/4W	
R583	1-249-439-11	(WR80ES).... CARBON	68K	5%	1/4W	
R584	1-249-433-11	(WR80ES).... CARBON	22K	5%	1/4W	
R584	1-249-434-11	(WR820A).... CARBON	27K	5%	1/4W	
R585	1-247-874-11	(WR820A).... CARBON	62K	5%	1/4W	
R585	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W	
R586	1-249-434-11	(WR80ES).... CARBON	27K	5%	1/4W	
R586	1-249-436-11	(WR820A).... CARBON	39K	5%	1/4W	
R587	1-247-864-11	CARBON	24K	5%	1/4W	
R591	1-249-409-11	CARBON	220	5%	1/4W	
R594	1-249-441-11	CARBON	100K	5%	1/4W	
R595	1-249-442-11	CARBON	510	5%	1/4W	
R598	1-249-441-11	CARBON	100K	5%	1/4W	
R599	1-249-417-11	CARBON	1K	5%	1/4W	
R602	1-247-887-00	CARBON	220K	5%	1/4W	
R603	1-249-425-11	CARBON	4.7K	5%	1/4W	
R604	1-249-441-11	CARBON	100K	5%	1/4W	
R605	1-249-428-11	CARBON	8.2K	5%	1/4W	
R606	1-249-437-11	CARBON	47K	5%	1/4W	
R607	1-249-417-11	CARBON	1K	5%	1/4W	
R608	1-249-441-11	CARBON	100K	5%	1/4W	
R609	1-249-423-11	CARBON	3.3K	5%	1/4W	

Ref.No	Part No.	Description				
R701	1-249-421-11	CARBON	2.2K	5%	1/4W	
R702	1-249-421-11	CARBON	2.2K	5%	1/4W	
R703	1-247-856-00	CARBON	11K	5%	1/4W	
R704	1-249-428-11	CARBON	8.2K	5%	1/4W	
R705	1-249-425-11	CARBON	4.7K	5%	1/4W	
R706	1-249-429-11	CARBON	10K	5%	1/4W	
R707	1-249-409-11	CARBON	220	5%	1/4W	
R708	1-249-420-11	CARBON	1.8K	5%	1/4W	
R709	1-249-426-11	CARBON	5.6K	5%	1/4W	
R710	1-249-422-11	CARBON	2.7K	5%	1/4W	
R711	1-249-430-11	CARBON	12K	5%	1/4W	
R712	1-249-429-11	CARBON	10K	5%	1/4W	
R713	1-249-409-11	CARBON	220	5%	1/4W	
R714	1-249-429-11	CARBON	10K	5%	1/4W	
R715	1-249-429-11	CARBON	10K	5%	1/4W	
R721	1-249-429-11	CARBON	10K	5%	1/4W	
R801	1-249-434-11	CARBON	27K	5%	1/4W	
R802	1-249-434-11	(WR80ES).... CARBON	27K	5%	1/4W	
R803	1-249-434-11	(WR80ES).... CARBON	27K	5%	1/4W	
R804	1-249-434-11	CARBON	27K	5%	1/4W	
R805	1-247-895-00	CARBON	470K	5%	1/4W	
R806	1-247-895-00	CARBON	470K	5%	1/4W	
R807	1-247-895-00	CARBON	470K	5%	1/4W	
R808	1-247-895-00	CARBON	470K	5%	1/4W	
R809	1-249-425-11	CARBON	4.7K	5%	1/4W	
R810	1-247-862-11	CARBON	20K	5%	1/4W	
R811	1-249-425-11	CARBON	4.7K	5%	1/4W	
R812	1-247-862-11	CARBON	20K	5%	1/4W	
R813	1-249-437-11	CARBON	47K	5%	1/4W	
R814	1-247-866-11	CARBON	30K	5%	1/4W	
R815	1-249-435-11	CARBON	33K	5%	1/4W	
R816	1-247-872-11	CARBON	51K	5%	1/4W	
R818	1-247-872-11	CARBON	51K	5%	1/4W	
R819	1-249-405-11	CARBON	100	5%	1/4W	
R820	1-249-437-11	CARBON	47K	5%	1/4W	
R821	1-247-866-11	CARBON	30K	5%	1/4W	
R822	1-249-435-11	CARBON	33K	5%	1/4W	
R823	1-247-872-11	CARBON	51K	5%	1/4W	
R825	1-249-405-11	CARBON	100	5%	1/4W	
R826	1-247-872-11	CARBON	51K	5%	1/4W	
R827	1-249-441-11	CARBON	100K	5%	1/4W	
R828	1-249-429-11	CARBON	10K	5%	1/4W	
R829	1-249-429-11	CARBON	10K	5%	1/4W	
R830	1-249-429-11	CARBON	10K	5%	1/4W	
R831	1-249-429-11	CARBON	10K	5%	1/4W	
R832	1-249-417-11	CARBON	1K	5%	1/4W	
R833	1-249-435-11	CARBON	33K	5%	1/4W	
R858	1-249-432-11	(WR820A).... CARBON	18K	5%	1/4W	
R859	1-249-436-11	(WR820A).... CARBON	39K	5%	1/4W	
R860	1-247-854-11	(WR820A).... CARBON	9.1K	5%	1/4W	
R862	1-247-850-11	(WR80ES).... CARBON	6.2K	5%	1/4W	
R862	1-247-858-11	(WR820A).... CARBON	13K	5%	1/4W	
R863	1-247-846-11	(WR80ES).... CARBON	4.3K	5%	1/4W	
R864	1-249-424-11	(WR820A).... CARBON	3.9K	5%	1/4W	
R865	1-247-810-11	(WR820A).... CARBON	130	5%	1/4W	
R865	1-247-852-11	(WR80ES).... CARBON	7.5K	5%	1/4W	

Ref.No	Part No.	Description			
R868	1-249-429-11	CARBON	10K	5%	1/4W
R869	1-249-429-11	CARBON	10K	5%	1/4W
R870	1-249-429-11	CARBON	10K	5%	1/4W
R874	1-247-903-00	CARBON	1M	5%	1/4W
R891	1-249-429-11	CARBON	10K	5%	1/4W
R892	1-249-429-11	CARBON	10K	5%	1/4W
R893	1-249-415-11	CARBON	680	5%	1/4W
R894	1-249-415-11	CARBON	680	5%	1/4W
R901	1-249-429-11	CARBON	10K	5%	1/4W
R902	1-249-429-11	CARBON	10K	5%	1/4W
R903	1-249-429-11	CARBON	10K	5%	1/4W
R904	1-249-429-11	CARBON	10K	5%	1/4W
R905	1-247-903-00	CARBON	1M	5%	1/4W
R917	1-249-437-11	(WR80ES).... CARBON	47K	5%	1/4W
R918	1-249-413-11	(WR820A).... CARBON	470	5%	1/4W
R919	1-249-437-11	(WR820A).... CARBON	47K	5%	1/4W
R920	1-249-437-11	CARBON	47K	5%	1/4W
R921	1-249-407-11	CARBON	150	5%	1/4W
R922	1-249-409-11	CARBON	220	5%	1/4W
R923	1-249-411-11	CARBON	330	5%	1/4W
R924	1-249-413-11	CARBON	470	5%	1/4W
R925	1-249-415-11	CARBON	680	5%	1/4W
R926	1-249-417-11	CARBON	1K	5%	1/4W
R927	1-249-420-11	CARBON	1.8K	5%	1/4W
R928	1-249-424-11	CARBON	3.9K	5%	1/4W
R929	1-249-407-11	CARBON	150	5%	1/4W
R930	1-249-409-11	CARBON	220	5%	1/4W
R931	1-249-411-11	CARBON	330	5%	1/4W
R932	1-249-413-11	CARBON	470	5%	1/4W
R933	1-249-415-11	CARBON	680	5%	1/4W
R934	1-249-417-11	CARBON	1K	5%	1/4W
R935	1-249-420-11	CARBON	1.8K	5%	1/4W
R936	1-249-424-11	CARBON	3.9K	5%	1/4W
R937	1-249-407-11	CARBON	150	5%	1/4W
R938	1-249-409-11	CARBON	220	5%	1/4W
R939	1-249-411-11	CARBON	330	5%	1/4W
R940	1-249-413-11	CARBON	470	5%	1/4W
R941	1-249-415-11	CARBON	680	5%	1/4W
R942	1-249-417-11	CARBON	1K	5%	1/4W
R943	1-249-420-11	CARBON	1.8K	5%	1/4W
R944	1-249-424-11	CARBON	3.9K	5%	1/4W
R946	1-249-430-11	CARBON	12K	5%	1/4W
R948	1-249-430-11	CARBON	12K	5%	1/4W
R950	1-249-430-11	CARBON	12K	5%	1/4W
R951	1-249-433-11	CARBON	22K	5%	1/4W
R952	1-249-437-11	CARBON	47K	5%	1/4W
R953	1-249-437-11	CARBON	47K	5%	1/4W
R954	1-249-424-11	CARBON	3.9K	5%	1/4W
R961	1-249-429-11	CARBON	10K	5%	1/4W
R963	1-249-429-11	(WR80ES).... CARBON	10K	5%	1/4W
R963	1-249-431-11	(WR820A).... CARBON	15K	5%	1/4W
R0391	1-249-430-11	(WR820A).... CARBON	12K	5%	1/4W
R0392	1-247-883-00	(WR820A).... CARBON	150K	5%	1/4W
R0393	1-249-393-11	(WR820A).... CARBON	10	5%	1/4W
R0394	1-249-431-11	(WR820A).... CARBON	15K	5%	1/4W
R0395	1-247-864-11	(WR820A).... CARBON	24K	5%	1/4W

Ref.No	Part No.	Description			
R0491	1-249-430-11	(WR820A).... CARBON	12K	5%	1/4W
R0492	1-247-883-00	(WR820A).... CARBON	150K	5%	1/4W
R0493	1-249-393-11	(WR820A).... CARBON	10	5%	1/4W
R0494	1-249-431-11	(WR820A).... CARBON	15K	5%	1/4W
R0495	1-247-864-11	(WR820A).... CARBON	24K	5%	1/4W
RV11	1-238-597-11	RES, ADJ, CARBON 1K			
RV11A	1-238-597-11	(WR80ES)....RES, ADJ, CARBON 1K			
RV21	1-238-597-11	RES, ADJ, CARBON 1K			
RV21A	1-238-597-11	(WR80ES)....RES, ADJ, CARBON 1K			
RV71	1-238-600-11	RES, ADJ, CARBON 10K			
RV71A	1-238-600-11	(WR80ES)....RES, ADJ, CARBON 10K			
RV72	1-238-600-11	RES, ADJ, CARBON 10K			
RV72A	1-238-600-11	(WR80ES)....RES, ADJ, CARBON 10K			
RV121	1-238-600-11	(WR820A)....RES, ADJ, CARBON 10K			
RV122	1-238-600-11	RES, ADJ, CARBON 10K			
RV221	1-238-600-11	(WR820A)....RES, ADJ, CARBON 10K			
RV222	1-238-600-11	RES, ADJ, CARBON 10K			
RV391	1-230-497-11	RES, ADJ, CARBON 22K			
RV491	1-230-497-11	RES, ADJ, CARBON 22K			
RV501	1-238-953-11	RES, VAR, CARBON 50K/50K (BALANCE)			
RV502	1-241-133-11	RES, VAR, CARBON 50K/50K (REC LEVEL)			
RV503	1-238-085-11	REA, VAR, CARBON 20K/20K (PHONES LEVEL)			
RV901	1-241-134-11	RES, VAR, CARBON 20K (BIAS (DECK B))			
RV0391	1-230-497-11	(WR820A)....RES, ADJ, CARBON 22K			
RV0491	1-230-497-11	(WR820A)....RES, ADJ, CARBON 22K			
RY31	1-515-726-11	RELAY			
S81	1-571-958-11	SWITCH, PUSH (1 KEY) (STOP DET)			
S82	1-571-281-21	SWITCH, LEAF (CrO ₂ DET)			
S83	1-571-281-21	SWITCH, LEAF (METAL DET)			
S84	1-571-281-21	SWITCH, LEAF (ERASE PROOF (SIDE A))			
S85	1-571-281-21	SWITCH, LEAF (ERASE PROOF (SIDE B))			
S86	1-571-281-21	SWITCH, LEAF (HALF DET)			
S87	1-572-393-11	(WR820A)....SWITCH, LEAF (DIRECTION)			
S701	△1-571-305-11	SWITCH, PUSH (1 KEY) (POWER)			
S901	1-554-303-21	SWITCH, KEY BOARD (SYNCHRO DUBBING HIGH SPEED)			
S902	1-554-303-21	SWITCH, KEY BOARD (SYNCHRO DUBBING NORM SPEED)			
S903	1-554-303-21	(WR820A)....SWITCH, KEY BOARD (A+B REC)			
S904	1-554-303-21	SWITCH, KEY BOARD (AUTO PAUSE)			
S905	1-554-303-21	SWITCH, KEY BOARD (BLANK SKIP)			
S906	1-554-303-21	SWITCH, KEY BOARD (COUNTER A/B)			
S907	1-554-303-21	SWITCH, KEY BOARD (COUNTER RESET)			
S908	1-554-303-21	SWITCH, KEY BOARD (COUNTER MEMORY)			
S909	1-554-303-21	SWITCH, KEY BOARD (■ (DECK B))			
S910	1-554-303-21	SWITCH, KEY BOARD (▷ (DECK B))			
S911	1-554-303-21	SWITCH, KEY BOARD (<◁ (DECK B))			
S912	1-554-303-21	SWITCH, KEY BOARD (PAUSE ■■ (DECK B))			
S913	1-554-303-21	SWITCH, KEY BOARD (REC MUTE ○ (DECK B))			
S914	1-554-303-21	SWITCH, KEY BOARD (◀◀ (AMS)(DECK A))			
S915	1-554-303-21	SWITCH, KEY BOARD ((AMS) ▶▶ (DECK A))			
S916	1-554-303-21	(WR820A)....SWITCH, KEY BOARD (REC ● (DECK A))			
S917	1-554-303-21	SWITCH, KEY BOARD (■ (DECK A))			
S918	1-554-303-21	SWITCH, KEY BOARD (▷ (DECK A))			
S919	1-554-303-21	SWITCH, KEY BOARD (<◁ (DECK A))			
S920	1-554-303-21	(WR820A)....SWITCH, KEY BOARD (PAUSE ■■ (DECK A))			
S921	1-554-303-21	(WR820A)....SWITCH, KEY BOARD (REC MUTE ○ (DECK A))			
S922	1-554-303-21	SWITCH, KEY BOARD (◀◀ (AMS)(DECK B))			

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description
S923	1-554-303-21	SWITCH, KEY BOARD ((AMS)▶▶ (DECK B))
S924	1-554-303-21	SWITCH, KEY BOARD (REC ● (DECK B))
S925	1-571-520-11	SWITCH, SLIDE (DIR MODE)
S926	1-571-520-11	SWITCH, SLIDE (DOLBY NR)
S927	1-571-520-11	SWITCH, SLIDE (TIMER)
T51	1-433-366-11	TRANSFORMER, BIAS OSCILLATION
T391	1-433-335-11	(WR80ES)....TRANSFORMER, BIAS OSCILLATION
T391	1-433-367-11	(WR820A)....TRANSFORMER, BIAS OSCILLATION
T491	1-433-335-11	(WR80ES)....TRANSFORMER, BIAS OSCILLATION
T491	1-433-367-11	(WR820A)....TRANSFORMER, BIAS OSCILLATION
T701	△ 1-450-147-11	TRANSFORMER, POWER
T0391	1-433-367-11	(WR820A)....TRANSFORMER, BIAS OSCILLATION
T0491	1-433-367-11	(WR820A)....TRANSFORMER, BIAS OSCILLATION
TP1	*1-564-505-11	PLUG, CONNECTOR 2P
TP691	*1-564-520-11	PLUG, CONNECTOR 5P
TP0691	*1-564-520-11	(WR820A)....PLUG, CONNECTOR 5P
X801	1-577-358-21	VIBRATOR, CERAMIC (4MHz)
X901	1-577-358-21	VIBRATOR, CERAMIC (4MHz)

ACCESSORIES & PACKING MATERIALS

1-463-974-11	(WR820A)....REMOTE COMMANDER (RM-900W)
1-559-533-11	CORD, CONNECTION
*3-354-918-11	(WR820A)....INDIVIDUAL CARTON
*3-354-918-31	(WR80ES)....INDIVIDUAL CARTON
*3-359-942-01	CUSHION
3-703-450-01	INSTRUCTION
*3-703-710-41	STICKER, SONY SYMBOL (12)
3-751-920-21	(WR80ES)....MANUAL, INSTRUCTION (ENGLISH)
3-751-921-21	(WR820A)....MANUAL, INSTRUCTION (ENGLISH)

Note: The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

TC-WR80ES/WR820A

SONY SERVICE MANUAL

US Model

CORRECTION- 1

Correct your service manual as shown below.

 : indicates corrected portion.

Page	INCORRECT	CORRECT
9	Playback Level Adjustment : : : :	Playback Level Adjustment : : : :
	Adjustment limits : LINE OUT level : $-15 \pm 0.5\text{dB}$ (0.130 to 0.146V)	Adjustment limits : LINE OUT level : $-5 \pm 0.5\text{dB}$ (0.411 to 0.462V) 